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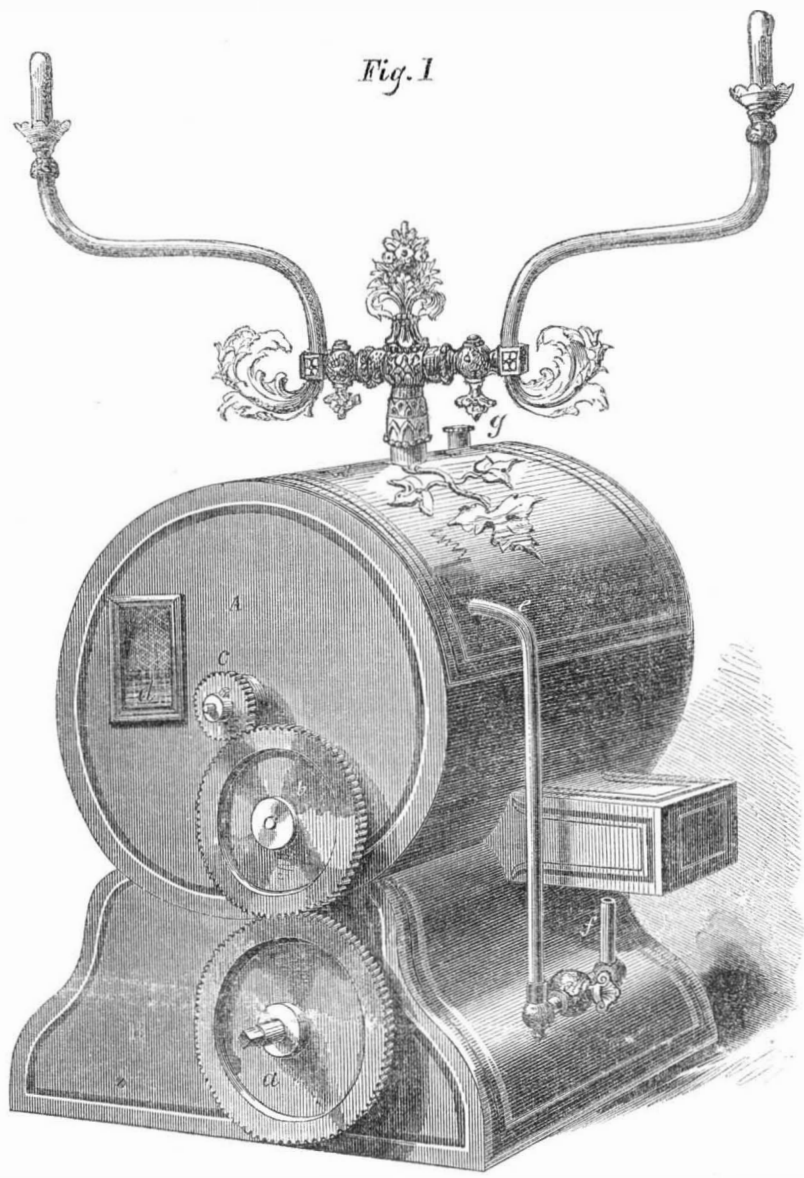
Roman and Modern Roads..

"In many things the world has made no progress, as the excavations of Egypt and Pompeii attest. There are no roads in the world now that will at all compare with those of ancient Rome. Even our best street pavements hold no comparison with them. The Appian way, which was made three hundred years before Christ, ran from Rome to Capua, about 140 miles, and part of it was through the Pontine marshes. Nine hundred years after its construction, it was described by Procopius as showing no appearance of waste or ruin. It is described as composed of large square blocks of freestone, so well fitted as to show no joint, the whole looking like one stone. The bed underneath was broken stone, grouted with cement.—Parts of this road are still sound and bid fair so to remain. The Russ pavement which is seen in Broadway, New York, and the cubical block pavements of our city, seem to be contrived by the paviors with an eye to encouraging the trade by future repairs and renewals. The old Romans would have saved the expense of cutting up hard stone into little blocks. The larger they could get them, the more they knew they would resist displacement, and of course the longer they would endure. When we come up to the wisdom of the old Romans, we shall also have ways that will cease to tax this generation for repairs. Besides, the effective power of the horse would be greatly increased, the terrible noise would be lessened, and the mud reduced."—[Phila. Ledger.

[The *Ledger*, we believe, is wrong, which is not often the case. Large blocks are totally unsuited for modern pavements in cities. Those of the first Russ pavements laid in New York were too large. The old Roman roads were not traversed by such innumerable armies of carts and carriages as our streets; they were used principally for foot travel. Neither were they underlaid with gas and water pipes, like our streets, which require such pavements as can be easily lifted. The best size of blocks for street pavement should not be over eight inches broad by fourteen in length. It is easy for us to make roads as permanent as the Romans. When the first Russ pavement was laid in this city, we stated that the blocks were too large (about sixteen inches square,) and that when they would wear smooth, the distance between the joints would be found so great that horses would be liable to slip and fall. This turned out to be actually the case with respect to part of Broadway, hence no Russ pavement is now made with large blocks unless their faces are cut in grooves about six inches apart. Much of the paving of this city is now done with small blocks, but the operatives or contractors do not seem to be acquainted with their business. The best way to pave streets is to have a well rammed substratum of air slacked lime and sand, and the small rectangular granite blocks—all of one depth—laid firmly on this.

MACE'S BENZOLE GAS APPARATUS.

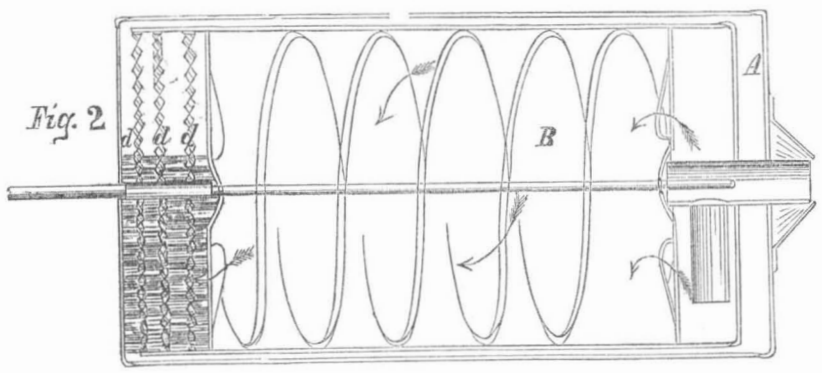
Fig. 1



The annexed engravings are views of the portable apparatus for making Benzole gas light for private dwellings, offices, factories, &c., invented by A. M. Mace, of Springfield, Mass.

Figure 1 is a perspective view of the apparatus; fig. 2 is a longitudinal section through the screw pump, for supplying air to the benzole chamber, and fig. 3, on the next page, is a view of this principle of illumination applied to lighting a dwelling. By clock-work machinery inside of fig. 1, when it is wound up, and the screw pump, fig. 2, set in motion, the gas is produced and passes out of the two burners shown, so that by simply winding up a spring in the lower part of the case on the arbor of the wheel *a*, wheel *b* is set in motion, which operates the pinion,

Fig. 2



c, on the spindle of the revolving screw pump, fig. 2, the action of which at once generates the gas, and by applying a match to the burners, they produce a brilliant gas light. A composition of benzole, alcohol, and water, is shown in the chamber fig. 2; in this revolve disks of wire gauze, *d d d*, on the spindle of the screw pump, B, which, as it revolves, draws in air through an open tube at its center on its opposite end, and carries it through, as shown by the arrows, into the liquid chamber, where it is agitated and diffused among the fluid, and as it passes up absorbs and carries off the hydro-carbon of the fluid, in a state of gas, mixed with the air, which passes up into the burners through the conducting tube, and produces illuminating gas. *g* is the tube by which the vessel, A, is supplied with the illuminating fluid. The plan of feeding in the air by a screw air pump, affords a very equal current, to prevent the flame flickering. The apparatus is exceedingly simple. The chamber is perfectly close; it is furnished with a small window, which shows the hight of the fluid, and when it requires a new supply. Benzole is a colorless hydro-carbon liquid, obtained by the distillation of coal tar, and has a pleasant smell like that of burnt almonds. It is very volatile and inflammable, but as it contains a great amount of carbon, its symbol being C12 H6; it burns with a smoky flame, hence it requires a great amount of air rapidly supplied to it and more hydrogen, to make it burn with a clear light. Many plans have hitherto been tried to effect this, so as to make it into gas, and as it was known that by blowing air through it, a very good gas could be produced, Mr. Mace has here presented a machine which is in practical operation—not a mere theory—and which manufactures gas from benzole by simple clock-work.

As pure benzole gas contains chemically six parts of hydrogen and twelve parts of carbon, and produces a smoky flame, and alcohol contains six parts of hydrogen and two of carbon, and produces a blue but clean flame, when these two are mixed in proper proportions, with the same quantity of water that there is of alcohol, they produce a luminous and smokeless flame.

The proportions of the mixture are not confined to fixed quantities, but those best adapted for use are equal quantities of alcohol and water with a stratum of benzole (which floats upon the surface) of from half an inch to an inch in depth.

One of the objects of mixing water with the benzole and alcohol is, to produce a complete hydration or moistening of the vaporizing current, and at the same time to prevent a loss of normal temperature in the benzole, which loses its heat by the evaporation.

The reason why moist air is preferred as a vaporizer of the benzole and alcohol, and as a vehicle of the vapor it takes up from them, is, that it distends the volatile matter held in solution by it, and dilutes it to so great an extent that it takes on a more permanent form than if simply vaporized in dry air; and, besides this, it imbibes and dissolves the vapor of the benzole in larger portions than dry air can possibly do.

There is another reason why perfectly hydrated or moist air is used to vaporize the benzole and alcohol, and that is, complete combustion is best secured by the presence of the aqueous vapor, and a rich, yellow, bright flame is only obtainable in that way.

The gas obtained from this mixture consists of air completely saturated with aqueous vapor, holding in diluted solution the carbon and other inflammable matter of the benzole and alcohol, in such proportions as to make it equivalent to olefiant gas.

On one end of the machine is the glass index, on which is marked the hight to which it is to be filled; and it should be kept filled within half an inch of said mark by adding, from time to time, alcohol and water in equal quantities (for they evaporate in about the same ratio,) not forgetting to keep the stratum of benzole from half an inch to an inch in depth, as before stated.

The temperature of the mixture and that of the surrounding air, to make the best light, should be about 70° Fahr., but it may be several degrees above or below. When found to be too low, it may be brought almost immediately to the proper temperature, by lighting the jet, *f*, of the pipe, *e*, for this purpose, It heats the fluid in the small attached chamber above, and raises it to the proper temperature.

When it is necessary to burn the gas in a cold medium, a simple fixture for that purpose may be attached to the pipe near the burners, taking the heat from the flame for the purpose of raising the temperature of the gas to the proper hight before it arrives at the burners.

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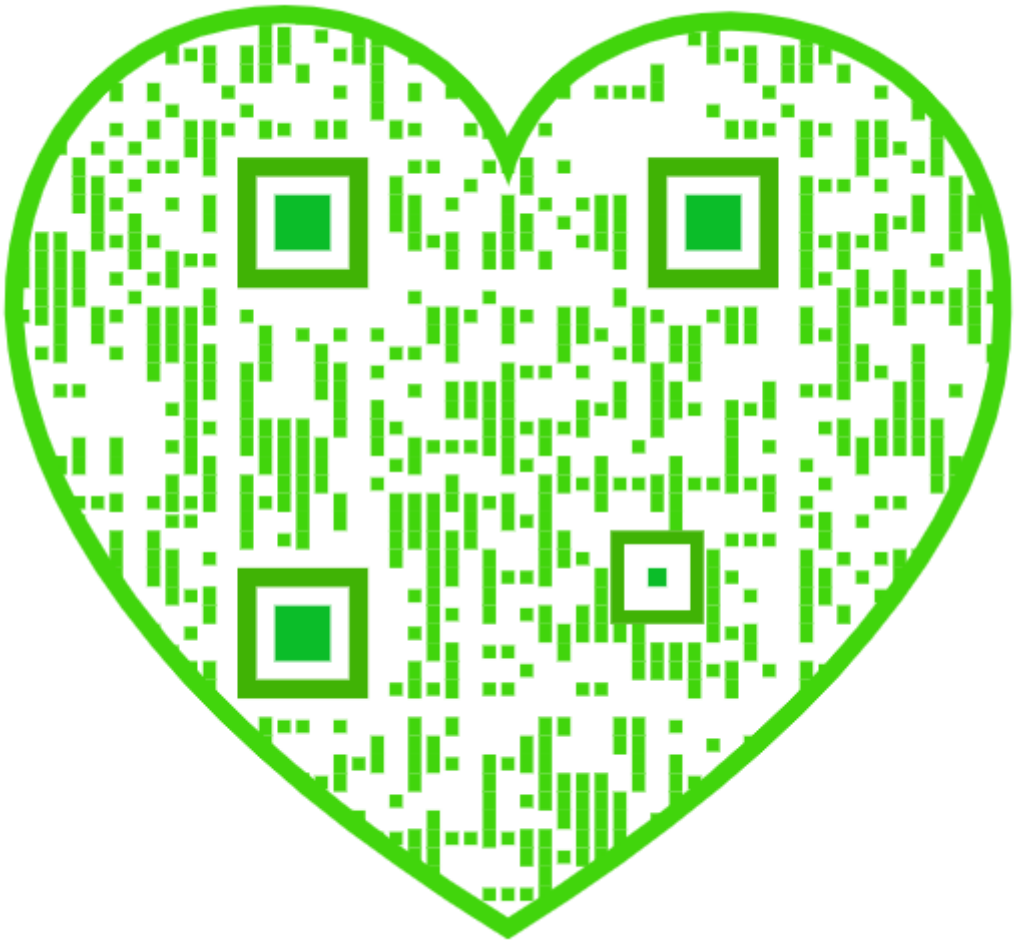

The machine may be placed in a kitchen, or in any other part of the house desired, where the temperature is in the vicinity of 70° Fahr., and pipes may be arranged, as in the ordinary way for common gas, to carry it to any part of the house, like fig. 3.

This gas can be carried in pipes of the size for common or coal gas, but a liberal size is preferable, and the rule observed by experienced gas fitters, to prevent accumulation of condensation, should be observed in placing the pipes.

Benzole, like alcohol, is inflammable, and should, like all inflammable spirits, be handled with some care.

The present price of benzole does not exceed $1.12½ per gallon, to which add the price of a pint of alcohol, at present 12½ making $1.25, and as much water as alcohol, and you will have a mixture that will produce light as cheap as coal gas.

This light is free from the unhealthy exhalations experienced in coal gas, and is also very agreeable to the eye.

Benzole gas is eight times heavier than coal gas, and requires a much larger orifice at the burner; and in its combustion, it produces much more heat.

When the price of benzole is reduced to forty cents per gallon, it will be a cheap and convenient method of heating small apartments, and for cooking purposes.

The mixture described used in this machine, was patented July 13th, 1852.

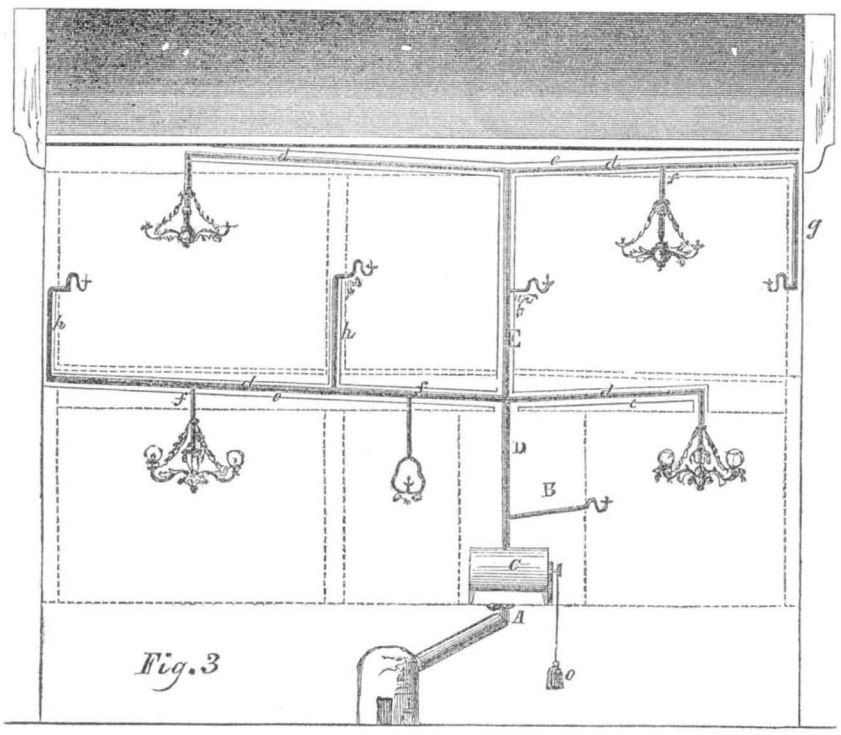

Fig. 3

In fig. 3, C represents an apparatus like fig. 1, excepting that instead of a spring being employed to drive the spiral air pump and agitating the wire gauze disk, a weight, *o*, is employed. The stove, A, gives out a low heat, and keeps the fluid at a proper temperature. B represents a room on the first story, lighted up by jets, and E is a room on the second story lighted up in the same manner. D is the main gas pipe, *d d* are branch pipes, *f f* are jet pipes leading down to the ornamental burners; *e e* represent the spaces between the floor and ceiling, and *h h* are side lights projecting from the walls just as buildings are now fitted up for the use of common gas.

These machines are so constructed as to be very durable, and not liable to get out of order, and require but little attention, as they are self regulating, by the beautiful arrangement of the spiral pump, B. Thus, for example, when only two jets are burning and one is shut off, less gas will be evolved, as the spiral revolves with less velocity. This is owing to the gas being compressed in the fluid chamber, and offering resistance to the revolution of B. By simply shutting off all the jets, the machine will stop of itself.

In referring a short time since to the great quantities of coal oil manufactured in England from Boghead cannel coal, we directed attention to the manufacture of the same liquid from the cannel coal of our own country, which exists in abundance, especially in Virginia. We would now direct attention to the manufacture of benzole, the hydrocarbon fluid used in this machine, which is now obtained from England, but at a price we are informed, which makes this gas as cheap at least as common gas. Who would burn oil, candles, or any of the camphene fluids in private dwellings, when gas can be produced so easily in a portable machine like this.

One of these machines is now in our office, where it can be seen, and examined in operation.

More information may be obtained by letter addressed to Mr. Mace, Springfield, Mass.

The Art of Dyeing—No. 5.

Red on Silk—Silk is generally dyed in the yarn state, as none but that of the softest quality, in the piece, can be colored without creasing and injuring the appearance of the fabric, excepting by the use of complicated machinery. As has been stated in former articles, almost all silk has to be deprived of a natural gum previous to being colored.—Some silk is dyed in a gummy state, but the amount is small, and of this we will not speak. Silk, cotton, and wool, to be dyed any of the primitive colors—yellow, red, and blue—must be white, or they cannot be dyed a pure color. Only two kinds of substances are commonly employed for coloring red on silk, namely, cochineal and red wood—embracing Brazil, peachwood, or Nicaragua. The mordant for Brazil wood red is simply alum, a tub of which is kept standing at a strength of about 3° hydrometer, or of a strong taste. As it is a simple color to dye, the peculiar strength of the mordant need not trouble any person who wishes to dye this color. The silk being deprived of its gum and soap, and well washed, is wrung (if in yarn,) and entered into the above tub, where it is handled for about ten minutes and sunk beneath the liquor, and allowed to steep for about four hours. It is then lifted and dripped, and washed in one tubfull of clean cold water, and is wrung and scutched on pins for the dye stuff. About four pounds of good Brazil wood boiled will dye ten pounds of silk yarn. This should be given hot in a tub, and the silk entered and handled for about half an hour, wnen it will be found to have acquired a good full color. It is then washed well in cold water, wrung, and dried. Some dyers give their dye stuffs at two separate times, one-half in the first tub and one-half in a second tub, and this is the best plan. The alum should always be given cold, and the dye stuffs should be given moderately cold in the first tub, and pretty hot in the second. Peach wood and Brazil wood should be kept boiled up in strong liquor for dyeing either silk or wool.

Old silk dresses, if boiled in a strong solution of soap, then well washed, and the old color discharged in a hot liquor of diluted sulphuric acid, and well washed again, can be dyed a good red by the same mode as that described for white silk yarn. Ribbons may be dyed in this manner by any female by simply making up a solution of alum in a crock, and proceeding as above directed for the silk dress. Old ribbons can in this manner, if they are of soft silk, be made to look equal to new. They can be stiffened with a little weak white glue, dissolved in water, and ironed on the wrong side with a flat iron. All Brazil wood reds are of a rich color, but inclined to a ruby shade, that is, they are not of a bright red color. Another way to dye red on silk with Brazil wood, is by making up a strong standing tub of the nitro muriate of tin and Brazil wood liquor, and handling the silk in this till it is the proper depth of color. This liquor must be very strong, the spirits at the ratio of 3°, and the dye wood liquor as strong. For common purposes, this method of dyeing red on silk should not be pursued. If a very few drops of the nitro muriate of tin is added to the last liquor—for dyeing by the alum process, as described—a few minutes before the silk is finished (but it must be lifted out of the tub for this purpose,) it will make the color more brilliant.

Cochineal Red—This is the most beautiful red that is dyed on silk, and far exceeds all ancient colors for brilliancy. The mordant for this is nitro muriate of tin spirits, and cream of tartar. The spirits should be strong, about 3° in the hydrometer, and for each pound of silk no less than three ounces of cream of tartar should be mixed with the spirits. The silk is spirited moderately hot, handled for half an hour, and left to steep for three hours. It is then lifted, squeezed, or wrung, and is ready to receive the cochineal. It takes no less than four ounces of cochineal to dye one pound of silk. This is ground fine, put into a clean copper kettle and boiled for ten minutes. It is then put off the boil and cooled a little down, and the silk entered and handled at a scalding heat, for three quarters of an hour, when it will be found to be a beautiful color. To dye white crape shawls a full red, it requires six ounces of cochineal to every pound weight of the shawl. Four ounces of good cochineal will dye fifteen yards of silk. By preparing silks with alum instead of spirits, they can also be dyed red with cochineal, but they must lie in the alum for at least six hours.

London Scarlet—The London jobbing dyers, in dyeing crape shawls a scarlet color, give them first a strong body of annatto, then steep them over night in a tub of strong cold alum liquor, and give the cochineal as has been described, in a kettle at a scalding heat, with two ounces of spirits for every heavy crape shawl. They allow four ounces of cochineal for every pound weight of silk, but the experience of New York jobbing dyers is different; they have to give six ounces of the common cochineal. All silks should be well washed before they are dried. There is no fear of spoiling this color with too much cochineal; it is too dear to be used indiscriminately.

Crimson is a binary color, composed of the red and blue rays, but it is commonly called red, because the red ray greatly predominates. It is dyed by preparing silk with a strong body of archil, instead of the annatto as for scarlet, and then dyed a cochineal red on the top of this, by putting the silk through the whole process described. After being dyed red it can be toned down to any depth of crimson by handling in a weak alkaline liquor; urine is used for this purpose. Silk in pieces about twenty yards in length, can be handled easily by selvedging.

London has been long distinguished, in England, for dyeing the finest cochineal reds, and the spirits which are made there for this purpose used to be sold to all the other dyers throughout that country. The simple muriate of tin, however, makes a very good spirits, but the red they produce is more on the blue shade than spirits made having the greatest proportion of nitric acid. All nitro muriate of tin spirits, for cochineal red colors, should have one ounce of sal ammoniac added in a dissolved state, to every gallon of spirits. This removes any trace of iron (which saddens the color) that may be in the nitric acid, and there is but little made which is free from it. The next article will relate to dyeing blue.

Note—James Yates, in writing to us from Bridgeport, Ohio, thinks these articles in the Scientific American imperfect for country manufacturers, "because," as he says, "they do not tell us how to make or proportion the different acids, and how much tin to put in." He is mistaken so far as it relates to the making of spirits, if he means this. On page 130, we gave the proportions of acid and tin; the proportion of tin is to feed it slowly in, till the acid will take no more. The complicity of spirits, and the mystery which some dyers throw around them, is all fudge. If Mr. Yates wishes to know how to make acids, we can inform him, but it is no more a part of the dyers regular business than to make indigo, the bichromate of potash, or to cultivate the cochineal insect. Mr. Yates will never go wrong, if he is a country dyer, and uses no other spirits than the simple muriate of tin—fully saturated with pure tin.

Distributing Scientific Documents.

Congressional printing which, until very recently, was disgraceful to the nation, and to the typographical art, has been reformed in some degree; but the system, or want of system, which governs the distribution of scientific documents, is still wretched in the extreme. "Men of science," says Silliman's *Journal*, "to whom particular reports would be of direct practical use, are often entirely unable to procure copies of them, while many men of more political importance, but who will never even look into them, have these same reports profusely lavished upon them. Valuable documents which are reported to applicants as all exhausted, do wholesale duty as wrapping paper for Washington grocers and marketmen, at a standard price of four cents a pound, maps and plates included. Distributing Owen's Geological Report to a dry goods importer and the Treasury report on commerce to a geologist, would seem too great an absurdity to exist if we did not know that hundreds of truly valuable volumes are annually thus wasted."

The remedy for this ridiculous waste of the public money seems to us extremely simple. Sell copies of the documents referred to, to all who desire them, at the cost of production. This plan has been adopted in England, and has been found to answer the purpose perfectly. We are opposed to the deadhead system, root and branch, and shall go strongly for its eradication from all departments of affairs, public and private. Abolish the franking privilege, and sell the documents!—[Life Illustrated.

The Fishy Taste of Boston Water—the Reason.

Dr. Jas. R. Nichols, of Haverhill, Mass., has written an article to the Boston *Journal* which we think accounts, in a very satisfactory manner, for the late fishy taste of the water in Boston. Haverhill is supplied with water from Round Pond, which is fed by bubbling springs, and the bottom and shores of which are clean and pebbly; no swamp waters, nor decayed vegetation finds their way into it, and yet its waters sometimes have the same fishy taste of those proceeding from Lake Cochituate, which supplies Boston, and which taste has been attributed to decayed vegetation. Dr. Nichols discovered that the fishy taste of water in Haverhill—which has taken place in winter as well as summer—has been caused by a slime which accumulates on fish when they are not abundantly supplied with fresh water, and which is thrown off in the water when new fresh water is supplied to them. The fish in Lake Cochituate, he believes, were not supplied with sufficient quantities of fresh water during the great drouth of last summer, and hence the phenomenon, as in Haverhill, of the fishy taste experienced in drinking Boston water. This appears to be a very conclusive argument. He admits that his view of the question does not detract from the value and importance of the investigations pursued with so much sagacity and ability by Professors Jackson and Horsford. The remedy is, "remove the fish."

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On Quercitrine.—By M. Rigaud.

The author has investigated the coloring matter of quercitron bark in Will's laboratory. The coloring matter contained in it, called quercitrine by Chevreul, has since been investigated by Bolley, who called it quercitric acid; and his investigation shows it to be probable that this body contains sugar, and therefore belongs to the glycosides, as he found that it furnished formic acid by treatment with oxydizing agents.

Rigaud's quercitrine, C36 H20 O21, or more probably C36 H19 O21, was prepared essentially according to Bolley's directions. The commercial bark was extracted with alcohol of spec. grav. 0·849; the expressed fluid was freed from qnercitron-tannic acid and a brown body by gelatine or animal membrane. This purified solution was further evaporated after the distillation of the alcohol, replacing the alcohol as it evaporated by water, when the quercitrine, which is insoluble in hot water, is deposited. By the direct evaporation of the alcoholic solution, only a brown extract is obtained. The substance is obtained pure by repeated solution in alcohol, and separation by means of water.

It is of a sulphur or chrome-yellow color, of a slightly bitter taste, inodorous, composed of microscopic crystals of the right-rhombic system, which do not polarize light; it is soluble in 425 parts of boiling water (400 parts according to Bolley,) is readily soluble in dilute ammonia and solution of soda, sparingly soluble in ether, and almost insoluble in cold water. The ammoniacal solutions become darker in the air, and acquire at last a dark brown color. In dry distillation, it fuses, becomes darker in color, and for the most part decomposed; the residue is a light cinder, whilst the receiver contains a small quantity of a sublimate accompanied by the ordinary products of dry distillation, such as empyreumatic oils. Both the aqueous and alcoholic solutions of quercitrine give a dark green color with perchloride of iron, without producing a precipitate; the color is still observable when the solution is diluted 4000 to 5000 times. Its analysis gave,—

				Bolley.		
Carbon,	53·04	53·07	53·66	52·486	36	53·50
Hydrogen,	5·03	4·91	5·22	4·958	19	4·71
Oxygen,	41·93	41·62	41·12	42·556	21	41·70

The analyses differ principally in the amount of carbon from Bolley's, who calculated for this body the formula C16 H9 O10. The author founds his proposed formula upon the following facts.

Quercetine, C24 H10 O11.—If quercitrine be boiled with much water and dilute sulphuric acid, a substance of a brighter color separates, and a kind of sugar is contained in the fluid. The author calls this yellow body quercetine. When pure, it is a citron-yellow powder, with a greenish tint; and when examined under the microscope, it is found to consist of transparent crystalline needles, which do not polarize light. It is tasteless and inodorous, and undergoes no change in the air. It is but sparingly soluble in hot water, but dissolves readily in alcohol. It is soluble in acetic acid when hot, but separates for the most part on cooling. It possesses the character of a weak acid. Water containing a little potash or soda dissolves it with the greatest facility, and with a golden-yellow color. On the addition of an acid, it separates again in flakes; whilst the color disappears. It is also readily soluble in ammonia; the solution constantly becomes darker when exposed to the air, until at length it acquires a humus-like color.—When heated upon platinum foil, it fuses, and burns with a strongly fuliginous flame, leaving a light coal as a residue, which disappears entirely at a more intense heat.

The solution of quercetine gives the same green color with perchloride of iron as that of quercitrine, a property possessed by these bodies in common with æsculine and æsculetine. Quantitative determinations of the sugar (by Fehling's method) gave 44·35 per cent. of sugar, supposing it to be grape-sugar. The quercetine being nearly insoluble in water, could also be determined directly by collecting and weighing. From 100 parts of quercitrine the author obtained 61·44 of quercetine. From this he calculated the following formnla for quercitrine, C36 H20 O21; during decomposition an equivalent of grape sugar would be produced by the assimilation of 2HO, leaving for quercetine C24 H10 O11; thus:

C36 H20 O21 plus 2HO equal C12 H12 O12 plus C24H10 O14,
Quercitrine. Grape Sugar. Quercetine.

of which the percentage composition agrees with that found by analysis:

Carbon,	59·15	59·05	59·26	59·48
Hydrogen,	4·05	4·35	4·27	3·84
Oxygen,	36·80	36.60	36·47	36·68

The author nevertheless considers it to be more probable that the formula of quercitrine is C36 H19 O21, which would consequently, by the reception of 2HO and the elimination of C12 H10 O10, give C24 H9 O11 for quercetine. The decomposition would therefore be represented in the following manner:—

C36 H19 O21 plus 2HO equal C12 H12 O12 plus C24 H9 O11,
Quercitrine. Grape Sugar. Quercetine.

The sugar formed by the splitting of the quercitrine does not deviate the plane of polarization. From the analyses it appears to have the composition C12 H15 O15 or C12 H12 O12+3HO. It tastes much sweeter than grape-sugar.—[Liebig's Annalen.

Comets.

Messrs. Editors—Your correspondent J. Wise, in an article appearing in the Scientific American of the 2nd ult., conjectures that those apparently erratic visitants of our heavens, comets, revolve round the centers of different systems in their aphelia; which hypothesis is wholly at variance with their observed motions while in their visible orbits, and the rapid periodical returns of several. The immortal Newton showed that the orbits of bodies revolving round attracting centers, must belong to the conic sections. The orbits of all the planets, and probably of nearly every comet, are ellipses, having the sun in one of their foci respectively. The orbits of the larger planets are moderately eccentric; but those of the asteroids are quite otherwise. The eccentricity of *Juno's* orbit amounts to one-fourth of its semi-transverse axis; and *Pallas* describes a path almost à eccentric. The asteroids form a sort of connecting link between planets properly so termed, and comets of short periods.

Comets, like planets, describe their orbits in obedience to the laws of gravitation.—When in the visible portions of their paths, their *radii vectores*, like those of planets, are observed to sweep over equal areas in their orbitual planes during equal divisions of time. Hence, if the perihelion distance and periodical revolution of one of these bodies become known, its orbitual elements can be readily computed, not only "according to cometic calculation," but strictly in conformity to mathematically demonstrated principles. Several comets are known to return to their perihelia periodically, in orbits whose mean distances and periods are not much different from those of the asteroids, such are Encke's and the twin comet of Biela. The mean distance of Encke's comet is 2·2 radii of the earth's orbit; and its eccentricity is four-fifths of its semi-axis. The aphelion of this comet is within the orbit of *Jupiter*, but that of Biela's is a little beyond his path. The mean distance of Halley's comet is about eighteen; and its eccentricity is above nine-tenths of its half major axis. No attracting body can exist in the upper focus of the orbit of any comet which is known to be periodical, besides its being impossible for a body to remain motionless at such a point, its perturbing actions would at once reveal its existence. Nor is there any physical necessity for such a contrivance, their motions being admirably directed by the solar attraction alone. No comets can have bodies in their further foci, unless they pass to the fixed stars themselves. The nearest fixed star whose distance has been ascertained, *Alpha Centauri*, is more than two hundred thousand radii of the earth's orbit from the sun. It requires light, moving continually at the rate of 192,000 miles per second, above 3¼ years to traverse this interval. How long then would it require a comet to complete the double tour? That comets do not reach our system from the regions of the fixed stars is quite evident. The solar system is continually moving through space with a velocity equal to about one-fourth of the earth's in her orbit, towards a point in the celestial regions situated in the constellation Hercules. It may be demonstrated that this motion of the system would cause a comet coming into it from external regions to move in a hyperbolic orbit, whatever might have been its previous velocity. The observed orbits of comets do not appear to be hyperbolas; hence, they belong to our system, and are carried along through space with it. Moreover, if they come from other systems, they would enter ours more frequently on the side towards which its motion is directed; but they approach the sun alike on all sides. Therefore we conclude that comets are a peculiar class of members of our system. Stillman Masterman.

Weld, Me.

Incrustations in Boilers.

Messrs. Editors—I took different kinds of wood and tried them in a steam boiler, such as mahogany, maple, walnut, both in sawdust and blocks; I also tried potatoes and corn meal, but I could not keep the encrustations from forming. I then tried some green white-oak blocks, from two to four cubic inches in size. In two weeks I went into the boiler, and to my great pleasure I found the scale all lying on the bottom, but the blocks were nowhere. I swept the boiler as clean as new iron, and then put about a peck more of such blocks. At the end of three weeks I examined it again, and found it as clean and smooth as a dinner pot, but no blocks. There was a white sediment on the bottom, which I suppose was the lime of the water. While I continued to use the white oak I was not troubled with scale. Were those blocks burnt up, or were they decomposed by the water, or did the steam decompose them as they floated on the surface?

A. M. O.

[The blocks very soon became as heavy as the water itself, and were no doubt dissolved by the continued action of the hot water. High pressure steam has wonderful solvent powers. It will dissolve the flinty rock itself. Silicon is found in solution in the hot springs of Iceland.

Hot Ash Heaps.

Messrs. Editors—Having often heard of houses being burned which were supposed to have taken fire from ash barrels, and ash houses, and also hearing of many houses being burned, and no cause for the same assigned, I am led to believe that there is a phenomenon produced from bulks of ashes, that is not generally known by our people (I for one.) In the year 1852 I was engaged in removing a pile of ashes about 4 feet in diameter from an ash house; they had been deposited there in small quantities during one or more years, and great care was taken not to have any fire in them when they were stowed away. On coming to the center of the heap I was surprised to find them almost as hot as they were when they were taken out of the center of the fire place during the time of a hot fire being over them. The hot ashes occupied a space in the center of about two feet in circumference. Now the question arises, what caused this heat, and what kept it up for so long a time, and if this kind of a chemical action has not taken place in many places, and at different times, and to such an extent as to cause ignition and set houses on fire. Yours, &c., F. Stinson.

Hebardsville, Ky. Jan., 19th, 1855.

[More than one question arises from the facts presented. Hot ash heaps will set houses on fire it kept in contact with wood. The non-conducting quality of dry-wood ashes, is well known. Some red-hot cinders are always thrown into ash pits; it is scarcely possible to prevent this, and as a number of charred chips are left mixed with the ashes, these are often ignited in the ash pit, and burn slowly for a long time, producing a low combustion. The ashes on the outside being a good non-conductor, prevent the heat from radiating into space, and thus the heat of ash heaps is maintained for a long time. Heaps of grain that have been burned in stores, have in some instances retained a great heat for a number of years.

A New Flesh Broth for the Sick.—By Justus Liebig.

To prepare a portion for one person of this flesh broth, take a half pound of meat of some freshly slaughtered animal (beef or chicken,) chop it finely, and mix it well with eighteen ounces of distilled water, to which has been added four drops of pure hydrochloric acid and from a half to one drachm of culinary salt. After standing for an hour, the whole is thrown upon a hair sieve, such as is to be found in every kitchen, and suffered to drain without the application of any pressure.—The first cloudy droppings are returned to the sieve until it flows quite clearly. A half pound of distilled water is then thrown in small portions upon the residue in the sieve. In this way is obtained about a pound of liquid (cold extract of flesh,) of a red color and pleasant broth taste. It is administered to the patient cold, and by cups full, at pleasure. It should not be heated, as it then becomes cloudy, and gives rise to a thick deposit of flesh-albumen, and hæmatin.

A great difficulty in the use of this broth is, it is liable to turn sour, from its undergoing change in warm weather; it enters regularly into fermentation, like sugar-water with yeast, without giving rise to a bad smell; the body thus formed is very well worthy of investigation. The extraction of the flesh must therefore be undertaken with quite cold water, and in a cool place. Ice water and external ice cooling remove this difficulty completely; above all, it is strictly to be cared for that the flesh is *fresh, and not several days old.*

Preserving Timber.

Antoine E. P. Le Gross, of Paris, has recently obtained a patent, the object of which is to preserve all kinds of timber by a cheap chemical solution, which does not injure its fiber. For this purpose he employs a solution of hydrochlorate of manganese saturated with chalk and the oxyd of zinc. The logs or pieces of timber are steeped in this solution about twenty-four hours. The vessel to hold the timber is placed vertically, so that the timber can be placed on end, to allow the liquid to flow through the pores by capillary attraction. If placed horizontally, the liquid will not flow through the fibers of the timber. Some creosote may be added to the liquid, and with a good effect. By dissolving coal oil in a concentrated solution of sulphuric acid, diluting this with water, and adding a little to the liquid described, the result desired will be obtained. When the timber is taken out of the trough it is dried in a hot room, and is then found to resist the destructive action of fire and the atmosphere in an eminent degree.

The waste chlorine liquor in our bleach works might be applied to impart preservative qualities to timber by the above process, by saturating it as described.

A solution of roasted alum and the sulphate of copper makes a very excellent preparation for wood, to render it non-combustible, and to impart to it good preservative qualities. The timber to be prepared should be placed on end in a water-tight trough, and the liquor poured in on its upper ends until the trough is full, and covers the timber. Of course some weight must be applied to hold down the timber in the trough. The solution should be proportioned of one pound of the sulphate of zinc to two pounds of roasted alum, and of the strength of 3° in a Twad. hydrometer.

Apple Sauce.

If any of our readers are in want of any good old fashioned apple *sass*, they can procure it of E. Myrick, Shaker Village, South Groton, Mass. We have carefully tested its quality, and can recommend it as a most delicious article for table use. Some time ago the facetious *Knickerbocker* was eloquent in its praise of Capt. Coddle's medicated apple *sass*, and preferred it to all other remedial agents. We can assure our neighbor that the *sass* of our shaker friend is far superior to Coddle's in every respect.

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New Inventions.

Improved Churn.

Although quite a number of patents have been obtained for improvements in churns, the end of excellence has not been obtained, simple as such dairy apparatuses are. The patent granted to Ezekiel Gore, of Bennington, Vt., on the 2nd inst., affords some assurance for this assertion. In the process of churning it is desirable to have some means of producing a ceaseless agitation among the oily butter globules of the fluid, also of regulating at pleasure the resisting surface presented to the cream. When the cream to be churned is thin, the resisting surface within the churn should be greater than when it is of a thick consistency. Again, in gathering the butter together after it has been separated from the other milky matters, very little agitation is required. These results are obtained in the churn by making the dash pins with their lower ends flat, and so arranged that they can be set feathered-edged, to present the exact amount of resisting surface required.

Suspended Purchase.

In the list of patents granted on the 2nd inst., there is one bearing the above title, granted to Wm. Hogg Brown, of Erie, Pa. From its name many of our readers may not be able to infer what it is—what are its uses, and what new objects it accomplishes. As a knowledge of the nature of the invention cannot well be obtained from the claims as published, we would state that it consists in transporting heavy bodies with great facility and ease across rivers and ravines, and it can also be applied to the saving of persons by shipwreck, when near the shore, by shooting a cable over the ship, and fastening it on the ship and to the shore, the cable being suspended above the wild waves, and a carriage, acting automatically, be made to run on the cable between the ship and the shore, and convey both persons and goods to land safely, and with rapidity. A fixed wire cable is suspended between two points, say both banks of the Niagara river, and Mr. Brown's peculiar carriage is made to traverse on this cable, guided by block and tackle, and made to act automatically to couple and uncouple, for loading and discharging at any desired point, with ease and correctness. It is a great engineering invention for transporting blocks for building piers in rivers, and transporting cannons and the baggage of armies. By it the whole artillery of a large army could be transported across a deep river with steep banks, in a very few hours. It has also been secured by patent in England, and soon will be in France and Russia.

Printing Press for a Number of Colors.

Every improvement which renders the printing press superior in its operations for ornamental printing, must certainly be considered an elevation of the art. This appears to be effected by the patent granted to Stephen Brown, of Syracuse, N. Y., also on the 2nd inst. The nature of the improvement consists in the use of a series of sectional plattens, the number of which correspond to the number of colors used. The form to be printed from is placed upon the several plattens, and so arranged that each part of the form upon the several plattens may receive the colors desired. The plattens work in grooves in the sides of the press frame, and rest upon stops placed at sufficient distances apart to allow the different ink rollers to pass over all the plattens at the same time. The plattens, when the frame is inked, are operated upon and pressed against the sheet simultaneously by a movable bed which works underneath them.

Feeding Paper to Printing Presses.

In the month of October, 1853, M. S. Beach, proprietor of the New York *Sun*, offered a reward, which was to stand open until the first of this month, for a machine to feed paper into his printing press. No inventor has come forward to contend for the reward, but on the 2nd of this month a patent was granted to David Baldwin, of Godwinsville, N. J., for such a machine, the patent of which was obtained through this office; the inventor having come off successful in competition with a number of other applicants. The working model of that invention has been in operation in our office, and we have seen it operate satisfactorily. Its principle of operation is by working an air pump, and feeding in a single sheet of paper at once, by lifting it from a table, and throwing it forward by a vibrating frame, having a number of tubes on it, by forming a vacuum in the tubes, by which means a sheet of paper flies up and sticks to them, until it is fed into the press, and then is dropped on the proper place, by simply destroying the vacuum in the tubes.

NEW WIND MILL.

Fig. 1

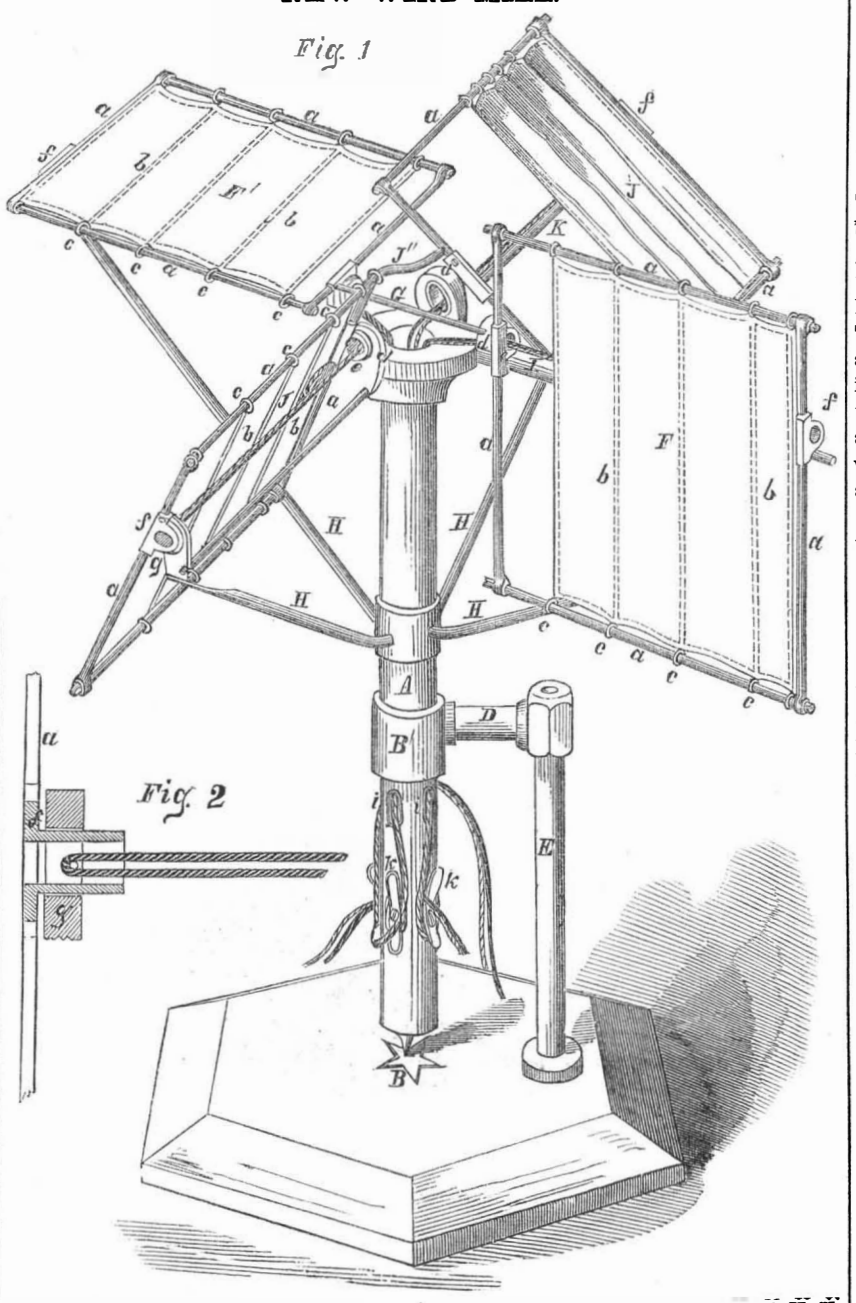
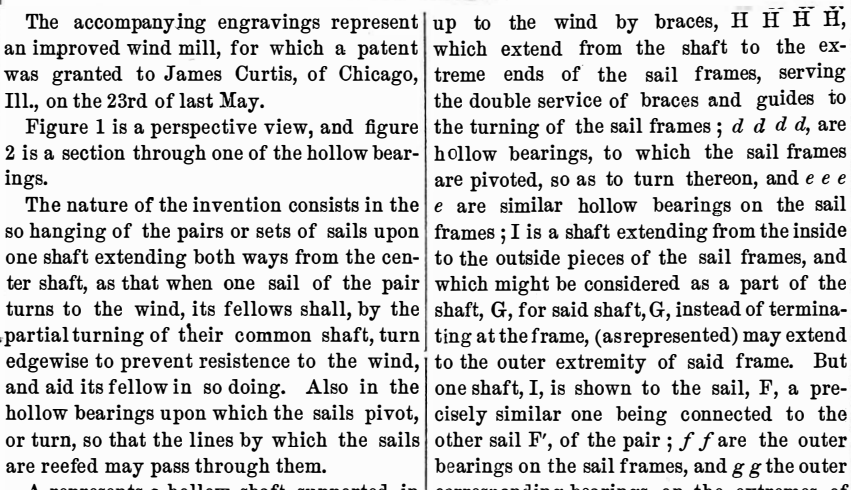


Fig. 2



The accompanying engravings represent an improved wind mill, for which a patent was granted to James Curtis, of Chicago, Ill., on the 23rd of last May.

Figure 1 is a perspective view, and figure 2 is a section through one of the hollow bearings.

The nature of the invention consists in the so hanging of the pairs or sets of sails upon one shaft extending both ways from the center shaft, as that when one sail of the pair turns to the wind, its fellows shall, by the partial turning of their common shaft, turn edgewise to prevent resistence to the wind, and aid its fellow in so doing. Also in the hollow bearings upon which the sails pivot, or turn, so that the lines by which the sails are reefed may pass through them.

A represents a hollow shaft, supported in a step, B, at its base, and a sleeve or boss, B′, attached to an arm, D, of the fixed upright, E, above the step, to give the shaft support. F F′ are one of the sets or pairs of sails, attached to the extreme ends of a common shaft, G, so that said shaft shall turn with the sails. The frames of the sails are oblong or square, and composed of the metallic pieces, *a a a a*, and the sails have rods or stays, *b b* (in dotted lines,) passing through with eyes, *c c*, turned on them to keep them, and allow them to move or slide on two of the opposite pieces, *a a*, of the frame. These sails are set at such angle or inclination to each other, that when one is fair to the wind, as F, the other, F′, shall be nearly horizontal, and one aids the other in making the changes. The sails are caught when fair up to the wind by braces, H H H H, which extend from the shaft to the extreme ends of the sail frames, serving the double service of braces and guides to the turning of the sail frames; *d d d d*, are hollow bearings, to which the sail frames are pivoted, so as to turn thereon, and *e e e e* are similar hollow bearings on the sail frames; I is a shaft extending from the inside to the outside pieces of the sail frames, and which might be considered as a part of the shaft, G, for said shaft, G, instead of terminating at the frame, (as represented) may extend to the outer extremity of said frame. But one shaft, I, is shown to the sail, F, a precisely similar one being connected to the other sail F′, of the pair; *f f* are the outer bearings on the sail frames, and *g g* the outer corresponding bearings on the extremes of the sail shafts, both being hollow, as in the case of the inner bearings. J J′ are the other set or pairs of sails, similarly rigged in all respects with the pairs, F F′, except that their common shaft, J″, is bent upwards, so as not to interfere with the shaft, G, of the other set. In these sets or pairs, K corresponds to the shaft, I, of the other set. The reefing lines pass through the hollow bearings, thence down through the hollow shaft, and out at the openings, *i i*, in said shaft, and are secured to the blocks, K K, on said shaft. At or below this point on the shaft may be arranged a platform for the attendant to stand on, so that he may stand thereon and reef the sail whilst the wind wheel is in motion. In the outer bearings are arranged a small friction roller, as seen in figure 2, around which one of the reefing lines passes, so as to draw their sails out to their extreme distance, the other line is for taking them in.

The sail frames are hung to their shafts with the greater portion below said shaft to aid in turning them, and cause the turning of one to aid the other. Means have been essayed to cause one sail to turn the other, in which a system of lines and levers were combined for the purpose. But in that method one sail must of necessity use or exert all the force required to turn the other one, whilst in this arrangement each of the pairs aids the other in coming to its place, whether fair up to, or horizontal to the wind.

The sails in this wind mill may be framed or pannelled like a door, and when so constructed can be used for a tidal water wheel. The shaft, A, may extend down through the building, and on it may be placed a large gear wheel or pulley, to gear with other wheels, or by belting to gear with other pulleys for driving a saw, grist mill, pump, &c. This horizontal wind mill can be attached to any building which is made strong to receive it. It will turn with the wind to any quarter. Mr. Curtis intends to try this wheel on a propeller, so as to try what wind can do with his sails in moving a vessel directly against itself.

More information may be obtained by letter addressed to Mr. Curtis.

Folding Life Boat.

Since the sad calamity of the *Arctic*, a great many plans of life boats and life preservers have been suggested, and brought before the public. Among the former means of saving life, the folding life boat of C. Locher, of this city, for which a patent was obtained on the 2nd, has claims to public attention. It consists of a folding frame, which supports and sustains a covering of sheet india rubber, or other water proof fabric, so that it can be folded into a very small space, or spread out—and this in a very short time—to form a very buoyant and strong boat. The frame has movable ribs hinged to its central part, and to these ribs and the central part of the frame there is attached a chain or chains, by which all the ribs are spread at once, and when extended are properly stayed and kept in position.

Employment for the Poor.

There is a Society formed in this city composed of some of our most respectable citizens, the object of which is to find employment in the country for persons out of work in the city. The object is a good one; there are far too many strong healthy laborers out of work in our city at present, and it is believed that great numbers of these are wanted in various parts of our country, for hard and heavy labor. Any of our subscribers who require such help, may find it by describing the qualifications and character of the person or persons they wish to employ, and forwarding the same to Mortimer De Motte, Corresponding Secretary, No. 13 Astor Place, or 27 Greenwich street, rooms of the Society.

Money Paid on Prizes.

MECHANICS' INSTITUTE,	Louisville, Ky.,	$100
M. KELLOGG,	Batavia. N. Y.,	$75
W. D. WHALEN,	Northville, Mich.,	$65
A. N. NEWTON,	Richmond, Ind.,	$55
J. LANE. Jr.,	Lockport, Ill.,	$50

We are anxious to pay over the remaining amounts to those who are entitled to them. The parties will please send their orders as soon as possible.

CORRECTION—J. S. Tuthill, of Tipton, Iowa, has called our attention to the fact that he has sent the same number of subscribers as J. Inger, of Waterford, N. Y., viz., 25. Upon examination we find this statement correct, therefore he is entitled to share the 14th prize with Mr. Inger.

Rapid Traveling.

On the 1st inst., the celebrated aeronaut, Mons. Godard, left New Orleans in his balloon, and in three hours and a half afterwards, landed safely at Amite settlement in East Feliciana, La., one hundred and ninety miles from New Orleans!

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Scientific American.

NEW YORK, JANUARY 27, 1855.

Seward's Speech on the Steam Engine.

The speech of Senator Seward, referred to in the patent case of Sickles vs. Corliss, on another column, contains either some misprints, or errors of its author. In one part the following language is employed :—"The steam engine in 1840 was of two and distinct kinds; the puppet valve engine chiefly *a marine* power, and the sliding valve engine *a stationary* or *land* power. In each of these two kinds the steam engine was yet a very expensive power, although Watt had diminished by three fourths the quantity of fuel which it consumed. It was still the cost of fuel that mainly prevented the steam engine from going into universal use as a prime moving power on sea and land." Senator Seward is greatly mistaken in making such assertions. The steam engine in 1840 had gone into universal use, and the slide valve, not the puppet, was the kind generally used in marine engines. Regular ocean navigation had been established between New York and Liverpool for three years before, and in that year the Cunard line commenced to make semi-monthly trips between Liverpool and Boston. The slide valve is the kind in use in the British steamships, while the puppet valves are used on the Collins and other American steamships. Mr. Seward, it appears to us, wished to convey the idea that but for improvements made in the cut-off of valves since 1840, by his client for slide valve engines for land, and Sickles for marine engines, the steam engine would not have come into such general use as it has. In this he greatly errs, as but very few engines having these cut-offs have come into use. Engineers will have their preferences, and there will always be a difference of opinion respecting their merits in comparison with the older plans for cutting off the steam. It is our opinion that no improvement of any consequence has been made in saving fuel in steam engines since 1840, by devices for working the valves. The greatest improvements have been made by a more general use of tubular boilers, an invention of more than fifteen years of age. We would not be understood as speaking a word against the importance of the *devices* embraced in the patents of Sickles or Corliss, for operating the valves of steam engines to cut off the steam, we only wish the fact to go forth that these improvements exerted no general influence to extend the use of the steam engine, the idea which Mr. Seward certainly intended to convey.

In another part of his speech he says, "a cut-off adjusted by hand is practically sufficient in marine engines, because the work to be performed by the engine remains the same during the voyage, in other words, the work of the marine engine is not intermittent." He certainly never was in the engine room of a steamship crossing the Atlantic, with a high fair wind, and a rough sea. He never made a greater mistake than to assert the working of the marine engine was uniform —not intermittent. It is the most unequal and intermittent of all engines; it is even frightfully so, when the paddles plunge one minute beneath the wave, and the next beat the air. The man who first invents a perfect automatic cut-off for marine engines, will certainly make a fortune and receive the thanks of the whole engineering world.

The Smithsonian Institute.

The New York *Tribune* has lately been somewhat violent in its attacks upon the above named institution, but while it is right with regard to one view of the question, it is essentially wrong in another. It finds fault with the regents of the Institute because they held a secret session and excluded reporters. This may be right and it may be wrong. They are a public board, to be sure, but no more so than the Senate, which sometimes finds it necessary to exclude spectators. The whole anger of the *Tribune* may be concentrated in one sentence, namely, the majority of the Board of Regents have decided that the expending of the donation of Smithson to erect and maintain a huge library in Washington would be a violation of the will of the donor. The Board is right, as any uninterested man of common sense must allow who reads that will.

The *Tribune* says, "The one-sided and narrow character of the Institution is to be carefully maintained, of course as a part of it; the vicious system of publication hitherto in vogue, is to be continued. Books which have so little real value that they could not find a private publisher—works on the minutiæ of ichthyology, geology, antiquities, or whatever other subject—are to be printed in small and costly editions for distribution among European libraries, possibly endorsing one or two names with a sort of remote eclat, but genuine science will be as little advanced by them as by their predecessors. In a word, the Smithsonian Institution is to remain a sort of lying-in asylum for luxurious authors, where their still-born offspring are arrayed in useless splendor, at the expense of a fund given for no such purpose."

We sincerely wish that this Institution had published more works of a practical useful character than it has; still it has published some very valuable and cheap works. We believe that we can assert positively, that the charge against luxurious authors is unfounded. The author of the work on antiquities, published by the Institute, we have been told, possessed but a very moderate amount of this world's goods when his work was issued. It would appear as if the *Tribune* considered geology something outside the pale of genuine science. We look upon it as a very useful science, and we regret that the Smithsonian Institute has not published more on its minutiæ. Ichthyology and antiquities, however, should form but a small part of the Smithsonian publications. A number of eminent professors should be appointed to this Institute—one for each branch of science—and one or two free lectures should be delivered in the Institution at certain hours every five days in the week, during five or six months in the year, commencing in December. During the other six months, these professors should be allowed quietness to pursue investigations in science —each in his separate department—and all the new discoveries made by them should be published annually. By this plan the will of Smithson would be carried out in a manner worthy of our country. By this means knowledge would be increased, and by cheap publications of the Professors' Reports, it would be diffused among men. A library confined to any locality cannot increase knowledge, and certainly it cannot diffuse it to a large extent. Smithson's will was made to increase knowledge among men—all nations—and he left it to the United States to do this as trustees. We hope the Smithsonian Institute will do this more thoroughly hereafter than it has hitherto done, but if it had published such works as those of Audubon, which would have done it honor, it would have come under the lash of the *Tribune*, for he had to get them published abroad, not being able to find a private publisher in his own country.

Meat Biscuit—Extract of Beef.

In 1851, a prize medal was awarded our countryman, Gail Borden, Jr., of Texas, at the World's Fair in London, for his patent meat biscuit, and it received the highest commendations by Lyon Playfair, the chemist who analyzed it. Yet although it was so prominently brought before the British government on that occasion, and its admirable qualities and adaptation for soldiers' and seamen's food pointed out, so far as we can learn no effort has been made by that government to introduce it into the army and navy. We know of no article of food that would prove so beneficial to the army in the Crimea. It is so compact and nutritious, that one ounce of it would suffice for a comfortable meal for a soldier. With a little water and a quart tin pan, a soldier could make an excellent mess of soup (the very thing he needs when exposed to the cold) over a fire made of a few chips, in ten minutes. We hope this will attract the attention of the Duke of Newcastle and the Emperor Nicholas also. Russia, we believe, would profit more by adopting the meat biscuit than England, inasmuch as beef is much cheaper in the former country, and it only requires to be condensed, as in the meat biscuit, to feed the Russian soldiers in the Crimea far better than those of the Allies; it is stated in recent accounts that they are not so well fed, and this affords a key for their not fighting so well. Give them plenty of meat biscuit to make soup to eat with their coarse bread, and their courage and endurance will rise fifty per cent. Sagacious and experienced surgeons have long ago endeavored to procure a more extended application of the extracts of meat; and, as it relates to its use in armies, Parmentier says, "extract of meat would offer to the severely wounded soldier a means of invigoration which, with a little wine, would instantly restore his powers, exhausted by the great loss of blood, and enable him to be transported to the nearest field hospitial." Dr. Proust says, "he cannot imagine a more fortunate application. What more invigorating remedy; what more powerfully acting panacea than a portion of the extract of meat dissolved in a glass of noble wine. Ought we to have nothing in our field hospitals for the unfortunate soldier, whose fate condemns him to suffer, for our benefit, the horrors of a long death struggle amidst snow and the mud of swamps." It would seem to us as if these eminent army surgeons were reproaching, when they wrote, years ago, the conduct of the British government of the present day, for the very suffering their soldiers are now enduring, amid snows and swamps, for the want of such a useful article of diet as the meat biscuit, which is composed of the extract of meat.

Soup as Food.

In an article on the "Management of Children, and their food," which appeared in the *Country Gentleman*, and which has been somewhat extensively copied, we find the seal of condemnation set upon soup as food for children, in the following language :—

"Soup, with the exception of the vegetable matters and shreds of meat that float in it, is asserted by a late authority (and doubtless correctly) to be entirely indigestible—that children would starve to death iffed on it alone. The stomach digests only solid food, even milk being coagulated into a curd to undergo this process, and yet there are many farmers who have long since given up the idea of raising fine calves on hay tea, who give their children soup for dinner, under the idea that it is very nourishing."

We venture to say that there never was a more foolish statement put forth than that embraced in this paragraph. What in the name of common sense is soup but vegetables and meat boiled in water, therefore all that is indigestible must be the water. If it had said "with the exception of the vegetable matters in pudding, all the rest is indigestible—that children would starve to death if fed on it," what would any one think of the author but that he was talking nonsense, and yet this language is as applicable to pudding as soup. It is also stated in the above paragraph, that "the stomach digests only solid food, even milk being coagulated into a curd to undergo this process." Milk, like soup then, on the same principle of reasoning, is unfit for the food of either children or calves, and only solid food should be given them. This would be a fine argument for the use of charcoal, nitre, and the phosphate of lime as food, as these solid substances contain the elements of which our bodies are formed.

Good soup is excellent food for both young and old as a part of their diet. This is abundantly verified in all those who use it. All food requires water to make it digestible; solid food, that is food containing no moisture, is unknown. Soup is just the extract of flesh and vegetables, and finely adapted for the action of the minute battery cells of the stomach. "The juice of flesh or the soup," says Liebig, "is particularly rich in incombustible matters, which constitute upwards of one-fourth of the weight of the dry extract of flesh," (page 419, letters on chemistry). On page 421 he again says "The juice of flesh contains the food of the muscles; the blood, the food of the juice of the flesh. From this view it is easy to explain the effect of soup; soup is the medicine of the convalescent. No one estimates its value more highly than the hospital physician, for whose patients, soup, as a means of restoring their exhausted strength, cannot be replaced by any other article in the pharmacopœia. Its vivifying and restoring action on the appetite, on the digestive organs, the color, and the general appearance of the sick, is most striking."

If soup were indigestible would it be given to hospital patients to restore their strength and exhausted energies? We trow not. That they do give it, is a proof of its superiority as an article of diet; it being the very opposite of indigestible—the most digestible of foods. However, as common sense teaches all observing men, the health and strength of man are best maintained by a variety of food. It would not be wise to feed on soup alone, nor upon bread, nor beef, but, in opposition to the above extract, we believe that soup made of barley, and good beef or mutton, is a most healthy and nourishing article of food for children, and it would be well if it were more generally used.

Hydraulic Cements.

There are quite a number of natural hydraulic limestones—experiment alone is the true test of their quality, but artificial hydraulic cement can be made, and is made, and used extensively in many countries. Slacked lime, when mixed with a certain proportion of clay, then burning this, and reducing it afterwards to powder in a grinding mill, makes an excellent hydraulic mortar, both portable and convenient for use, by simply mixing it with cold water until it acquires a proper consistence, to be applied with the trowel like common mortar. About twenty-four parts of dry clay are mixed with about eighty parts of pure rich lime, to make this cement. Another kind is made by mixing one hundred and forty parts of chalk with twenty parts, by measure, of clay, and then reducing the whole to a paste, by grinding them together in a pug mill. This latter hydraulic cement is manufactured in great quantities in Paris. The chalk is divided into pieces about the size of a man's hand, and mixed with clay in the proportion of four of the former to two of the latter, and ground in a mill, with a plentiful supply of water. The liquid mixture, as it is ground, is allowed to flow over a lip of the mill, and run into four or five troughs placed at successive differences of level, where the matter held in suspension by the water is deposited. The water is run off these troughs alternately, and the sediment is molded into small blocks, and allowed to dry in the air on platforms, until they have attained to the dryness of freshly quarried limestone. They are then put into a kiln and burnt like lime, then ground into powder, in which state it is ready to be used as has been described. The famous Portland Cement of England is made in this manner, excepting that the burning is conducted further than in the case of Paris cement, the contents of the kiln being heated to vitrification. Great care must be exercised in the burning and grinding of these materials.

Hydraulic cement can also be made in a more simple manner (but it is not quite so good) by mixing two parts of well burned lime, slacked and in powder, with one of brick dust, and mixing them well together into mortar with cold water. The brick for this purpose should be pounded and passed through a fine sieve.

Hydraulic cement can be made of a putty composed of linseed oil mixed with fresh slacked lime, into which is stirred some coarse cotton; this is simply a cheap substitute for white lead, and is principally used for cementing the joints of pipes laid underground, but is also very excellent for the outer coating of water cisterns.

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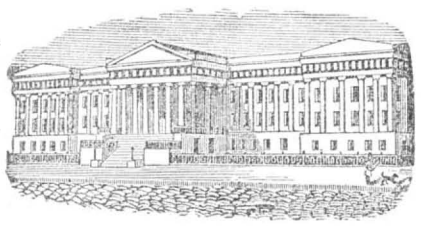

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from he United States Patent Office.

FOR THE WEEK ENDING JANUARY 16, 1855.

FIRE ARMS—T. H. Barlow, of Lexington, Ky. : I claim, first, constructing the chamber of the cannon nearly square, and winding, so as to give the projectile the motion and accuracy of the rifle ball.

SEED PLANTERS—Jarvis Case, of Springfield, Ohio : I claim the agitation of the seed slide, I, by means of a rocker, G, wire, S, and levers, g and x, for the purpose of filling the seed hole with a uniform amount of seed, as set forth.

Second, I claim the elastic cut-off plate, t, in combination with brush, v, arranged and constructed in the manner and for the purpose described.

WATER METER—J. S. Barden, of New Haven, Conn. ; I claim, first, the two heads being secured one to each end of the cylinder by means of bolts in the form of ——, for the purpose of collecting all sediment that may be drawn into the cylinder through the passages, and is not thrown out.

Or the collection of sediment upon their sides deposited from the water itself, without which the machine would, in a short time, cease to operate.

Second, the two small pistons, 7 8, with the spiral springs attached in combination with the guides and ——, O P, the latches, q R, suspended from above by the hinge joints, S T, and the bumper attached, the latches falling of their own gravity.

Third, the construction of the valve, c, suspended upon the two arms in connection with the hanger, L, the two boxes, 5, 6, the two spiral springs within the same, and resting upon the top of the said boxes with the cross bar, 7, and screw, D, for regulating the pressure of the valve, also in having the cross bar an elliptic spring resting on the boxes themselves, and finally the entire combination of the above parts for the object described.

SEWING MACHINES—J. S. Conant, of New York City : I claim, first, an endless rotary cloth feeder, in combination with a reciprocating needle or needles, substantially as described.

BENCH PLANE—W. C. Hopper, of Pittsburg, Pa. : I claim the constructing of planes with the chisel or bit set in front of its wedge, in combination with the use of a mouth piece, substantially in the manner and for the purposes described.

FIRE ARMS—E. H. Graham, of Biddeford, Me. : I claim so attaching the tubes or sh rt barrels in which the charges are placed, to a revolving plate, as to admit of their being separately and successively elevated into a horizontal position in a line with, and so as to form a continuation of the gun barrel; while the others retain a vertical position, as set forth and for the purposes specified.

I also claim the lever, m n, arranged and operating as described, for elevating and lowering the tubes, which hold the charges, and for cocking the gun, as set forth.

TEMPLES FOR LOOMS—J. H. Allen, of Biddeford, Me. : I claim arranging the turning joint of the temple about mid way between the ends of the shaft of the inner jaw, in combination with applying the spring, G, so that it shall rest at or near its middle against the adjusting screw, k, and at its ends against the two arms from the said shaft, the same enabling me not only to nearly if not entirely balance the temple and prevent it from undue pressure on the cloth, but to obtain from the spring a double action on the shaft or an action on each side of the turning joint, by which the advantages in operating the temple and preserving it in correct operation are obtained, as specified.

GOLD WASHER AND AMALGAMATOR—John S. Addison, of New York Oity : Though I do not claim the employment of a trunk into which the ore dirt or silicious matter containing the metal to be extracted, is fed, to meet an ascending column of water, as described, nor the operating of the scraper by a water wheel driven by the entrance water, either of itself, or connected with other devices.

But I claim, first, placing such a trunk, I, above a box, D, which forms a recepiacle for the gold or other metal separated tn the trunk, and which contains a proper quantity of quicksilver for amalgamating the said gold or metal, and also a water wheel, G, which is driven by the entrance into the said box of the water, which is to form the upward current in the trunk, for the purpose of giving motion into a scraper, H, to agitate the quicksilver to promote amalgamation, all substantially as described.

Second, I claim the arrangement around a trunk into which the pulverized ore, quartz, &c., is fed, to meet an ascending current of water which flows through and over the trunk of one or more troughs, K M, to contain quicksilver, and a corresponding number of over hanging rims, J L, situated above them in such a manner, substantially as described, that the flow of water, ore, &c., over one rim falls into the middle of the quicksilver into the trough below it, and keeps the same properly agitated to amalgamate with it the whole or some portion of the gold or metal contained in the overflow, as fully set forth.

PLUGS FOR LUBRICATING AXLES—Alfred C. Garratt, of Hanover, Mass. : I claim the chambered screw plug open at its lower end, and having a passage made through its side, and applied for removing the accumulated wheel grease, as described.

LAMP SHADES—M. B. Dyott, of Philadelphia, Pa. : I claim the arrangement of the shade, A, shield, B, and wires or their equivalent, C, with the intervening space, substantially as described, for the protection of the shade, as specified.

DOOR LATCH LOCKS—J. C. Kline, of Pittsburg, Pa. : I claim the arrangement in double key-holed right and left hand locks of the key tumbler, C, with its noses or projections, g g, in relation to the spring receiver, D, and the shoulders, d d, of the bolt, as set forth.

PLOWS—Arnton Smith, of Scottville, Ill. : I do not claim any of the separate parts of my plow as new, and I am aware that two plows have been united somewhat like mine, but so that both must advance together, and one must, when raised alone, rotate upon and effect the other, whilst my separate plows may move freely.

Therefore I claim the manner of coupling plow 1 with plow 2, by means of hinged slide rods, D, bar, E, and rod, F, for the purpose of allowing each plow a somewhat free and independent motion, and yet bring the plow, under the control of one hand of the plowman, and in some degree control both plows, as set forth.

LIME KILNS—S. H. Robinson, of Baltimore, Md. : I am aware that a series of kilns have been built in one stack, one placed over the other, and burned from the same or separate fires. These I do not claim.

But I claim the arranging of a series of side kilns around a central kiln, as that the waste heat from the former may be used for burning the lime stone in the latter, substantially as described, whereby a great saving of fuel and labor is attained, a more regular disposition of the heat made available, and either of the surrounding kilns stopped off, cooled and drawn, without interfering in the least with the others of the series, as set forth.

MOLDING MACHINE—G. M. Ramsey, of New York City : I do not claim the mere fact of working the two opposite sides of the same piece of stuff by once passing to and through the machine.

But I claim the automatic reversible feed, or its equivalent, whereby the two opposite sides of the same piece of stuff is worked, as described, by the double action of one cutter head, by once passing the stuff to and through the machine ; also the arrangement of the cone, and fan, all operated and operating substantially in the manner and for the purpose set forth.

FIRE ARMS—A. D. Perry, of Newark, N. Y. : I claim the arrangement of the tube in the stock for containing the caps, and a spring to force them forward in a line radiating from the axes of motion of the turning breech, and placing the nipple also in a line radiating from the axis of motion of the breech, so that when the breech is opened to receive a charge, the nipple will be brought into the same radial line with the cap tube, so that the same spring which forces the caps forward in the tube may also force one of them upon the nipple, thus simplifying the mechanism for automatic capping.

I also claim the use of an eccentric or its equivalent, as specified, in combination with the capping tube and nipple on the movable breech, as specified, for the purpose of forcing the caps to their proper place on the nipple, as the breech is brought in line for the discharge, as specified.

And I also claim pivotting the trigger to the lever for operating the breech, as described, so that the trigger shall be carried in and out by said lever, and shall not be brought into a position to act upon the lock until the breech is in a line with the barrel, as set forth.

BRAKE BLOCKS FOR RAILROAD CARS—Lucius Paige, of Cavendish, Vt. : I claim the placing the shoes in sockets or boxes, wherein they remain permanently fixed until worn up so as to be useless.

But I claim the improvement of so constructing the shoe, J, and the socket or bearing thereof, and applying them essentially as described, that the shoe may extend entirely through and out of the socket in opposite directions, and be capable of being moved up to the wheel as fast as occasion may require, until it, the shoe or rubber, is worn up or rendered unfit for further service, my improvement being one of great practical importance and utility.

SCALES—J. L. McPherson, of New Vienna, Ohio : I claim the concentric loaded rims, a and b, in combination with the attachment of the dish, constructed, arranged, and operating substantially and for the purpose specified.

SEWING MACHINES—H. B. Smith, of Lowell, Mass. : I do not claim a two pointed needle, having an eye in its center, as this has been patented to J. J. Greenough ; neither do I claim any other part, device, or thing claimed or patented in said Greenough's patent.

But I claim a slit or fissure formed in a needle, so as to be opened by any proper pointed instrument, and the thread inserted in this fissure, and then moved near to one end of it, then by removing the pointed instrument, the two elastic or spring sides of this fissure close together, and pinch and hold the thread so that the needle can be operated to sew a curved or straight seam, and a through or back stitch, essentially in the manner and for the purpose set forth.

Second, I claim the finger, Y, so arranged and operated (on the arm, s, by means of the spiral spring, the ring to adjust this spring, and the stop, T, or otherwise,) as to draw the thread through the cloth, so as to draw up the stitch and then let go of the thread by the revolving or moving of this finger, and the arm. s, or equivalent, essentially in the manner and for the purpose set forth.

MOLDING MACHINE—C. B. Morse, of Rhinebeck, N. Y. : I disclaim constructing a cylindrical rotating cutter head with a separating joint athwart its middle, as such is not new.

I claim constructing the cutter head of two flanged disks, with slots or openings, g, through one of the disks, to admit of cutters, e, being attached to the other part, and partially masked by the flange of the perforated disk, as described, in combination with cutters, f and l, in openings through the rim or flanges, and secured respectively to each disk, so as to present a cutting edge over the whole space, caused by the opening or closing of said disks by means of nut E and set screws, j, said combination favoring a current inward from the edges of the cutters to fill the partial vacuum formed in the interior of the head by the rotation of the same, thereby causing a speedy inward removal of the shavings from the cutters, and admitting of the double action of the same, as set forth.

Also, the adjustable shields, s, in combination with the feed rollers, F, for preventing the said rollers from lifting the piece operated upon, against the cutters, when the feed is not continuous, and the extremity of the piece reaches the roller, as set forth.

SPRING BALANCES—E. P. Beckwith, of New London, Ct., I claim the employment or use of the cylinder, A, surrounding the spring balance and divided into parts or graduated, substantially as shown, so that by the aid of the index rod G, or its equivalent, not only the weight but also the whole or aggregate cost of any article may be determined at a given price per pound.

STEERING APPARATUS—A. R. Tewkesbury, of Boston, Mass. : I claim arranging the rudder head within a concentric or surrounding frame or case, C, fastened to the deck, and applying on the top of the rudder head and within the case, as described, a driving shaft gearing, and one or more curved racks, of internal cogs, the whole to be operated by a hand wheel applied to turn the shaft, substantially as specified, the said arrangement of parts rendering their combination not only exceedingly efficient and compact, as a steering apparatus, but one wherein the lifting or raising of the rudder by a wave or sea is not liable to injuriously derange the machinery.

HAND TRUCK—Parley Hutchins, of Norwich, Mass. : I claim the elevator, constructed and combined with a hand truck, substantially as described, whether operated by a windlass or any other device commonly employed for raising weights.

GRAIN AND GRASS HARVESTERS—O. B. Judd, of Little Falls, N. Y. : I claim, first, the employment or use of the rotating cutters, M, and stationary cutter, N, arranged substantially as shown and for the purpose set forth.

Second, I claim attaching the connecting rod, G, to the outer end of the sickle, H, as shown, for the purpose of being enabled to employ a long straight rod with a compact machine.

Third, I claim attaching the sickle bar, I, to the finger bar, F, by hinges, as shown, whereby the sickle and connecting rod are kept properly in place, and the sickle readily attached to and detached from the machine, as described.

STRAW CUTTERS—J. A. Pitts, of Buffalo, N. Y. : I claim so combining the cutting wheel and bar, as that the edges of the cutters must always pass the bar at a fixed adjustable distance, whether the tendency to force the cutters from the straw be great or not.

MAKING BOXES OF PAPER—R. L. Hawes, of Worcester, Mass. : I claim, first, the pasting apparatus, consisting of rollers, 20 21, working in the open bottoms of vessels containing paste or other adhesive material, said rollers having cavities or cells to receive paste from the paste vessels, and transmit it to such parts of the roll or piece of paper or other material as may be necessary, as the paper passes between them before entering the machine, substantially as described.

Second, I claim the employment of a series, consisting of any suitable number of molds, G1 to G6, of proper form for the boxes, arranged so as to work radially or nearly so on or within a revolving mold wheel, I J, outside a series of tables. N N, in such a way that a piece of paper or other thin material to form a box, is taken between each of the several molds and their respective tables, and drawn between the edge of a projection, C, and of a clamp, t, or other edges attached to or forming part of the wheel, for the purpose of bending the paper up the sides of the mold, substantially as described, and thus forming three sides of the box.

Third, I claim attaching to the mold wheel between the mold a number of blades, c c, corresponding with the number of molds, so arranged at equal distances apart and at equal distances from the axis, E, of the wheel, that the distance between their cutting edges shall be equal to the required length of paper to form the box, and that they are severally and successively caused by the revolution of the mold wheel to act in combination with a fixed knife, d, suitably arranged in any way substantially as described, and cut the paper or material from the roll in proper lengths to form the boxes.

Fourth, I claim the clamps, t t, arranged, one at the side of each mold, and actuated and operating substantially as described for the purpose of lapping the part, 37, of the paper or material over the mold, to form part of the fourth side of the box.

Fifth, I claim the presser, R, arranged relatively to the mold wheel, and operating substantially as described, for laying down the edge of the part 37 of the paper or material, and confining it till the part 38 is lapped over it.

Sixth, I claim the presser, R, arranged relatively to the mold wheel, and operating substantially as described, to lap the part 38, of the paper or material over the part 37, to complete the fourth side of the box, and at the same time lap the part 40, over the end of the mold to commence the end of the box.

Seventh, I claim the lever, V V, working as described on or within a wheel, or its equivalent which rotates with the mold wheel, and successively so operated as described, by coming in contact with a fixed tongue, 33, or other fixed part of the machine during the revolution, that each at the proper time folds the part, 41, of the paper or material, and laps it over one side of the part 40, as represented.

Eighth, I claim the arm, U, arranged as described, carrying the plate, 15, by coming in contact with which the part, 42, of the paper or material is folded and lapped over the opposite side of the part 40, to that covered by the part 41, also carrying the plate 14, which is caused by the action of studs, 1 1, on the wheel, H, or its equivalent, to be moved from the central shaft to lap the part 43, over the part 40, 41, 42, and thus complete the formation of the bottom of the box.

Ninth, I claim the stationary smoothing and pressing plate 16, arranged as described, to smooth and finish the bottom of the box by the revolution of the latter in contact with it.

Tenth, I claim the arrangement and mode of operating the roller, 44, to take the glue or adhesive material from a fixed trough, 47, and distribute it over the bottom of the box to prepare the same for sanding.

Eleventh, I claim the shears, 62 69, arranged and operating as described at the end of the table, 61, along which the printed string of labels passes from the printing apparatus in combination with the intermittent motion of the said printing apparatus for the purpose of moving forward the labels at proper intervals, and cutting them off one by one, as required to be presented to the boxes.

Twelfth, I claim the table 71, attached to or supported above the shear blade, 69, so as to move with it for the purpose of receiving the cut label, and applying it to the box, as set forth.

Thirteenth, I claim the arrangement of and mode of operating the tongs, 74 75, substantially as described, that is to say, the said tongs being arranged so that each box will pass them after being completely formed, and being operated to move towards the mold wheel with open jaws, and to close upon the box when it is between them, so that the mold, by a movement in the direction of its length, may be withdrawn from the box, and then to move with closed jaws from the mold wheel to carry the box to a trough or box of sand.

Fourteenth, I claim the hook, 88, attached to one jaw of the nippers, and operated upon substantially as described, so that as the said jaws descend with the box towards the sand box, it throws up the mouth of the box to bring it to a nearly upright position, to dip the bottom in the sand, substantially as set forth.

Fifteenth, I claim the rod, 92, arranged and operated upon as described, to knock over the finished box from the sand box.

Sixteenth, I claim the general arrangement, and combination of the several portions of the machine, as described either with or without the labelling and sanding apparatuses, and their appendages.

SEED PLANTERS—Elijah Morgan, of Morgantown, Va. : I claim, first, The combination of the stationary protecting bar and the reciprocating feed bar, when the latter operates within a groove in the former, substantially in the manner described.

Second, I claim the combination of the V shaped forms of the bottom of the hopper and the bottom of the reciprocating bar, when said bar is provided with openings from both sides, which meet and vibrate over the holes, c, in the bottom of the hopper, substantially as described, and for the purpose set forth.

STEREOSCOPIC MEDALLION—J. F. Mascher, of Philadelphia, Pa. : I am aware that a daguerreotype case has been converted into a stereoscope, by constructing it with a supplementary flap or lid containing two lenses ; a patent having been granted to me for such an arrangement in 1853, therefore I do not claim the use of a supplementary lid, as used in a daguerreotype case for such a purpose.

But I claim constructing a medallion or locket, A B B, with two supplementary lids, C C, containing each a lens, D, and arranged so as to fold within the picture lids, B B, and in such relation to the same that upon being opened and properly adjusted they shall cause the lenses to stand opposite said lids, and thereby convert the medallion into a stereoscope, said arrangement also rendering the medallion useful as a microscope and sunglass, substantially as described.

MOLDS FOR CASTING PROJECTILES—Hezekiah Conant, of Hartford, Conn. : I claim the arrangement of molds in the periphery of a wheel combined with a stationary band, which also forms part of each mold, the whole operating as described.

LUBRICATOR FOR STEAM ENGINES—John Sutton, of New York City : I do not claim the employment of a cylinder and a solid piston combined with a grease reservoir to force grease into steam cylinders and other parts of engines and other apparatus while in operation, as I am aware that such a combination has been before made use of, but with cocks or valves not only in the discharge passage but into the passage communicating between the reservoir and cylinder.

But I claim arranging the passage or passages between the grease reservoir and forcing cylinder, substantially as described, so as to be opened and closed by the movement of a solid piston, thereby dispensing with a valve or equivalent, either in the piston or in the said passages, and only requiring one valve or cock in the discharge passage.

SEED PLANTERS—S. L. Stockstill and P. H. Humes, of Brandt, Ohio : We claim, first, the converging openings of the gauge board, enabling the graduation of the amount of feed, without narrowing or circumscribing the passage with respect to the size of grain, which is thus preserved from cutting or injury.

Second, the dividing ridge or flange around the perimeter of the feed wheel at its mid width, enabling the same wheel to score two exactly equal rows, and at the same time serving to stir the grain, and to shift out of the way any tailings or other obstructions that would intercept the discharge.

Third, the beveled or flaring axial mortise through the feed wheel, preventing any unevenness of the axle from wabbling or clogging the wheel or disturbing the feed.

ARRANGEMENT OF FILTERING APPARATUS TO PREVENT INCRUSTATION IN STEAM BOILERS—Gustavus Weissenborn, of New York City : I make no claim to the idea of purifying water before it enters the boiler for the purpose of preventing incrustation, for that has been done before.

I claim the arrangement of the exhaust chamber, D, girdled at its lower part by the cold water, B', with the basin chamber, F, and filters, G H K, in the manner and for the purpose set forth.

DIES FOR MAKING BOLTS—J. T. Willmarth, of Northbridge, Mass. : I claim the dies, a a' constructed as described, or in any manner substantially equivalent thereto, for the purpose of operating, simultaneously upon both sides of the head, as set forth.

CONNECTING PIPES FOR STEAM BRAKES—Wendell Wright of New York City : I claim providing each end of the several lengths of pipe for conveying the steam or compressed air under the cars, with a valve, k, and an elastic or movable tongue, l, applied substantially as described, so as to allow the valve to be closed by the pressure of the steam or air, when the end of the pipe is disconnected, but to be caused to open the valve by the entrance of the end of the pipe, into the mouth piece of the connecting tube, D.

BUILDING BLOCK—Elizabeth A. Messinger admrx. and William Spencer, adm. of the Estate of John A. Messinger, dec., of Milwaukie, Wis., assignors to Ambrose Foster, of Portland, Wis. : The building block described is claimed as a new manufacture.

NOTE—This building block is composed of sand and lime, in the proportions of 12 parts of sand to one of lims—mixed together and pressed in molds.

DOOR KNOBS—Wm. Leighton, (assignor to the New England Glass Co.) of Cambridge, Mass. : I am aware that hollow glass knobs have been lined with quicksilver, and that glass has been coated with pure silver for various uses, but I am not aware that a cheap door knob has ever been produced having the color and brilliancy of polished silver rendered durable, and free from liability to tarnishing or abrasion, by protection from the action of chemical or mechanical agents.

Therefore I claim the hollow silvered knob sealed up and protected, as set forth, as a new and highly ornamental manufacture.

RE-ISSUE.

SPARK ARRESTERS—James Radley and John W. Hunter, of New York City. Patented originally Jan. 2, 1850 : We claim, first, the arranging of a series of chambers and channels between two conically shaped plates, the chamber being so formed as to cause the products of combustion to impinge against that side of each of the dirt chambers which has the openings and caps, and thereby force the sparks, dirt, &c., into them in the manner desbribed.

Second, we claim the piece, p, suspended in the central aperture at the top of the spark arrester, arranged and operating in the manner and for the purpose substantially as described.

Third, We claim the double cover or top for the formation of a second series of dirt passages, arranged and operating in the manner and for the purpose substantially as described.

NOTE—One third of the entire number of patents granted as above, were obtained through the SCIENTIFIC AMERICAN Patent Agency. The great success which has attended our efforts in getting patents through, renders it certain that those inventors will promote their own interests by committing their business to our care. Our charges for making applications for patents are always reasonable and satisfactory, and anything entrusted to our care will be promptly attended to. Direct letters and models to Munn & Co., SCIENTIFIC AMERICAN Office, 128 Fulton street, New York.

Woodworth Planing Machine.

On the 19th inst., before Judge Betts, this city, a suit was brought in equity by the owners of the Woodworth Patent Planing Machine, in New York, against parties using the Norcross Planing Machine. The plaintiffs claim that the Norcross machine infringes the Woodworth patent, and pray for an injunction and an account. The suit being at issue, the plaintiffs moved for a trial by a jury on the question of infringement, which motion was opposed by the defendants. The Court has granted the motion, and made an order that an issue at law be framed in the suit, and be tried by a jury, at the next April Term of the Court, to ascertain and determine whether the Norcross machine infringes the rights of the plaintiff's under the Wood worth patent.

The parties in the case were Jas. G. Wilson one Wm. Van Hook vs. John B. Church and Jas. W. Ogden.

We will look forward to April with some anxiety, as this trial at law will perhaps be the most important that has ever taken place in our country.

Important Patent Case.

On the 13th inst. a very important patent case was decided in this city, in the U. S. Circuit Court, Judge Betts presiding. The parties were William B. Sickles and others, against Youngs and Cutter, on the complaint of an alleged infringement, by the defendants, of the patent known as "Sickle's Cut-Off," for operating the valves of steam engines, they having been using the engine of Corliss & Nightingale, of Providence, R. I., eight of which are in use in this city, and on which are used the cut-off of Mr. Corliss, also secured by patent. The defendants principally relied on the defense of non-infringement—that the Corliss cut-off was entirely different from that of Sickles. It was therefore a question of opinion given by different expert witnesses, upon which the jury was called to decide, and they did so, in favor of the plaintiff. Their decision was to the effect that the cut-off of Corliss was equivalent, although very different in form, to that of Sickles. Another jury would, perhaps, under the same circumstances, have made a contrary decision. William H. Seward was counsel for the defence, and made a great speech, but it did not save his client. The defence which he made was published in the *Tribune* in full. C. M. Kellar, who replied to Senator Seward, made an able defence, but the daily papers did not publish it, so that only one side of the question, as presented by counsel, has been placed before the public. We suppose Mr. Keller does not care about this, the gaining of his important case being enough to satisfy him.

Extension of Patents.

WOODWORTH'S PLANING MACHINE—As petitions are now circulating throughout the country, especially in the west and northwest of several States, against the extension of the Woodworth patent by Congress, we hope they will be very generally signed and promptly forwarded to Washington. The people of each Congressional District should forward their petition to their Representative, and request him to interest himself personally against movements for craftily extending this patent at the present session.

MCCORMICK'S REAPER—The Senate of this State passed a resolution on the 15th inst., requesting Congress not to grant the extension of McCormick's patent for his reaper. Great complaints have been made against McCormick's agents in this State, for being so exacting. How true such complaints are we have not had personal opportunities of knowing.

We hope that no patent will be extended by act of Congress during the present session. It would be very wrong for it to do so. No patent can be extended by the Commissioner without advertising and notifying the public of the application for the extension, in order that any person who has objections to the extension, may present them. or forever hold his peace. This is a fair and honest method of dealing with the public, as well as inventors. Ought Congress to do less? No. It should even be more particular, in order that those who are engaged in the business of manufacturing patent articles, or who have made improvements in patents which have expired, may be allowed to appear and tell their side of the story.

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TO CORRESPONDENTS.

J. S., of N. Y.—Connecting a gas apparatus with a cooking stove is not a new idea: it is not adopted, owing we believe to the disagreeable odor that invariably accompanies its use.

S. C., of Va.—Your scheme for propulsion is neither new nor patentable; it is attractive in theory, but good for nothing in practice. Don't spend time or money upon it; your other matters will receive due attention when the models arrive.

A. S. R., of N. Y.—A caveat does not secure an invention from infringement by others; the privilege consists in your being advised, for the space of 12 months, of any application for a patent for the same thing, which is found upon examination to possess the subject matter of a patent.

W. W. A., of Ind.—We have never known any other thing applied to a slate to cure its defects in pencil marks than good ink; wash the slate well with soap and water, then apply the ink and let it dry. Are you not mistaken about "Rabate," there is no substance of that name? Good black paint is the best thing you can use for painting blackboards.

R. A. N., of Tenn.—Your invention consists in an alleged new method of constructing mechanical letters of the alphabet for the purpose of teaching children more rapidly. The idea is new and we should think a patent might be secured for letters made as shown and described; sample letters are necessary.

E. M. C., of R. I.—Your alleged invention is nonsensical and could never be made of any practical use whatever; we speak plainly because we always dislike to see an inventor wasting his time and money upon grovelling and useless devices.

M. J., of Tenn.—We have received and carefully examined the sketch of your method of operating saws by attaching them directly to the piston rod, and we regret that we cannot encourage you to make an application for a patent; the same thing is illustrated in Vol. 3, Sci. Am., as the invention of A. H. Ward, of York, Pa.; you stand no chance whatever.

S. B. C., of Pa.—There have been several attempts to produce a practical machine for distributing printers' types, but as yet without success. The "requisites" are, to produce a machine capable of performing the work with economy and success; this is all the information we can give on this point.

C. & W., of N. Y.—We do not perceive the slightest chance for a patent on your print dryer. Several pertinent references could be given, but we presume it is not necessary; you are advised not to apply for letters patent.

H. D., of Mass.—The process for obtaining chromates consists in reducing the oxyd of iron or chrome ore, either wholly or in part, by means of carbon in any of its several forms, or by means of any of its compounds, which are or may be employed as fuel, such as carbonic oxyd or carburetted hydrogen as the first stage of the manufacture; it is Booth's patent.

E. A., of Va.—In Vol. 7 of the Sci. Am., page 320, we published an engraving of a safety lamps, the invention of Eloin of Belgium. It is constructed on the same plan as yours. You can procure Vols. 6 and 7 bound for $2,75 each.

W. H. S., of Pa.—We are not M. D.'s, therefore your application to us for advice in respect to your complaints is not exactly appropriate. You say you are troubled with the dyspepsia, and feel irrascible; you are unfortunate indeed: for the first difficulty we would recommend coarse substantial food, cold water bathing about once a week, plenty of open air exercise, chopping wood, or something of that sort; cup of weak tea or coffee with your breakfast, and toast or some light article for supper; or, what is better, no supper at all. For the second difficulty, perhaps we cannot do better than to advise with *Punch*—perfect freedom from the worry of children, drinking, smoking, snuff taking, card playing, talking politics, and arguing with an Irishman.—These are all excitants and should be avoided.

J. C. T., of Geo.—The powder you have sent us has very few of the qualities of good black lead, but exhibits those of an aluminous shale.

G. W., of Phila.—We do not know whether your plan would be patentable or not, as we do not know what it is, but the management of the batter to render the deposited metal hard or soft, is well known to electricians.

C. J. B., of Pa.—You say the pump will only be required to fill one bucket of the wheel at once as it (the wheel) revolves, while it will have all the buckets on one side (twenty) going down continually, and you therefore expect to get twenty times the power from the water to the quantity you have to supply; you can get no more power than what you supply. You forget that to raise the water by atmospheric pressure you have to remove the pressure from the one side of the column, which requires a force equal to that of the atmosphere. You never can drive a water wheel with a pump, and make the wheel work the pump.

A Subscriber—Should have signed his name to his letter, but as he appears to be candidly ignorant upon the point of his inquiry, we will answer his question, as it interests many foreigners. The fee required of an English subject on application for a patent, is $500, all other foreigners $300, a most miserable system of throwing stones at foreign inventors. If a foreigner comes to this country, resides one year, and makes oath of his intended citizenship, the fee is only $30. The law requires that the applicant make oath that he verily believes himself to be the original and first inventor, and also of his citizenship, therefore it is impossible to evade the high fee by assigning the invention to a citizen. Foreign inventors must either pay the high fee or reside in this country one year, and make oath of his intention to become a citizen: there is no getting round this.

G. A. R., of Pa.—We cannot give you any information about the Potato Planter; you should write to Mr. Anderson direct.

O. S. A., of N. Y.—Your head measurer, we should think, possesses decided novelty. You had better consult Messrs. Fowlers & Wells, the celebrated Phrenologists of this city in regard to its utility.

E. A., of Conn.—Such a combination as you describe would not form the legitimate subject of a patent, as neither part is dependent upon the other for its perfect success. It would be no more patentable than a combination of a hog's trough and a machine for making sausages. Each operation is performed separately.

W. N. V. G., of Ct.—Models accompanying applications for patents cannot be withdrawn from the Patent Office; they are kept by law.

J. B., of Conn.—The *Journal of Gas Lighting* is published in London, we believe, but we do not know how you can procure it.

J. G. H., of Fla.—We notice nothing patentable in your cigar machine. Your Temperator, we think, is patentable. You are right as to the meaning of "taking measures," &c. After that step you would be comparatively safe in exhibiting and selling your inventions.

☞ Patent Laws—The demand for copies of the Patent Laws has been so great latterly, that our last edition published is all exhausted. Trusting that our Congress will enact some amendment to the present statutes, during this Session, we do not choose to publish another edition until we can embody the amendments, therefore those who have remitted for copies will be kind enough to wait paitently for a month or two, and they will probably receive the *New Laws*. Circulars pertaining to the procuration of patents are furnished gratuitously upon application to this office.

Money received on account of Patent Office business for the week ending Saturday, Jan. 20:—

J. B., of O., $30; A. & T., of R. I., $250; C. E. S., of O., $25; C. M. E., of Pa., $30; A. J. B., of Mich., $25; P. & B., of O., $20; T. M. C., of Me., $25; R. S., of N. Y., $25; T. M., of Canada, $530; M. D. DuB., of N. Y., $20; C. I., of Ct., $25; W. T., of N. Y., $35; S. J. C., of S. C., $55; L. R., of N. Y., $150; A. B., of N. Y., $55; C. W., of Tenn., $55; H. W. P., of N. Y., $75; B. & S.: of Ct., $30; W. H. Z., of N. Y., $30; J. G., of Ct., $30; T. A. C., of N. Y., $25; J. R. H., of Ind., $37; R. W., of O., $25; T. W. L., of Va., $30; A. C. F., of Pa., $55; R. W., of Ct., $100; G. M., Jr., of Ill., $35; A. D. R., of N. Y., $50; S. P. C., of Wis., $30; E. W., of N. J., $30; J. T., of Pa., $25; A. B., of N. Y., $25; W. L., of Md., $500; J. J. T., of N. J., $45; J. McM., of Ky., $35; W. S., & Co., Mass., $25; St. Jos. J. Co., of Ind., $55; J. G. L., of Iowa., $30; J. C. D., of N. J., $250; S. & W., of N. J., $55; A. M., of N. Y., $30; B. H., of N. Y., $250; A. Van D., of N. J., $10; J. C., of N. Y., $55; J. J. B., of N. Y., $25; W. F., of N. Y., $25; I. W. McG., of N. Y., $30; M. M. & J. C., of Mass., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Jan. 20:—

J. J. B., of N. Y.; R. S., of N. Y.; T. M. C., of Me.; M. F. R., of O.; J. H. K., of Pa.; C. E. S., of O.; A. J. B., of Mich.; W. F., of N. Y.; C. I., of Ct.; W. T., of N. Y.; M. & C., of N. J.; A. B., of N. Y.; J. T., of Pa.; W. L., of Md.; J. R. H., of Ind.; T. A. C., of N. Y.; H. & M. B., of Vt.; J. McM., of K.; W. S. & Co., Mass.; M. M. & J. C. R., of Ct.; J. C., of N. Y.; T. M., of Canada; A. Van D., of N. J.

Important Items.

Back Numbers and Volumes—We have the following numbers and volumes of the Scientific American, which we can supply at the annexed prices:—Of Volume 5, forty numbers; price in sheets, $1; bound, $1,75. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Volume 7, all; price in sheets, $2; bound, $2,75. Of Volume 8, none complete, but about 30 numbers in sheets, which will be sold at 50 cents per set. Of Volume 9, complete in sheets, $2; bound, $2,75.

☞ We are able to furnish all the back numbers of the present volume of the Scientific American, and to new subscribers we shall continue to send the back numbers as long as we have them, so as to render their volumes complete.

Patent Claims—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

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4 lines, for each insertion,	$1,00
8 " " "	2,00
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Advertisements exceeding 16 lines cannot be admitted. neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—MESSRS. MUNN & CO., Publishers and Proprietors of the Scientific American, continue to prepare specifications and drawings, and attend to procuring patents for new inventions in the United States, Great Britain, France, Belgium, Holland, Austria, Spain, etc., etc. We have constantly employed under our personal supervision a competent board of Scientific Examiners, which enables us to despatch with great facility a very large amount of business. Inventors are reminded that all matter intrusted to our care are strictly confidential, and hence it is unnecessary for them to incur the expense of attending in person. They should first send us a sketch and description of the invention, and we will carefully examine it, state our opinion, and the expense of making an application, if deemed new and worthy of it. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country. Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps toward making an application.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

It is very important that trustworthy and competent agents should be employed in securing patents, as great care is necessary in the preparation of the papers, as well as integrity in taking proper care of the case until the inventor is duly invested with his legal rights. Parties intrusting their business in our hands can rely upon prompt and faithful attention. Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that the largest proportion of patents applied for in the U. S., go through our agency.

The offices of Messrs. Munn & Co.'s American and Foreign Patent Agency are at 128 Fulton Street, New York; London, No. 32 Essex st., Strand; Paris, No. 29 Boulevard St. Martin; Brussels, No. 6 Rue D'Or.

SECOND-HAND STEAM ENGINES FOR SALE—One of two, and one of six horse power. These Engines have been thoroughly refitted, and will be set up in good running order at a very low price. New Engines from 5 to 50 horse power, of superior workmanship, combining all the real modern improvements to insure strength, durability, economy, and simplicity, for common use. At THE WELLS MACHINE WORKS, 29th st. and 11th ave., New York. 1*

MILLWRIGHT WORK OF EVERY Description—Log, scroll, circular, and reslitting saw mills, tobacco cutting and pressing machines, on hand and manufactured to order. In the most approved and substantial manner, and for the lowest price, at THE WELLS MACHINE WORKS, 29th street and 11th avenue, New York. 1*

TEVIS & BARBAROUX, LOUISVILLE, KY.—Manufacturers of Steam Engines, Mill Machinery, superior Force and Lift Pumps, cast iron Screw Pipes for gas, steam, or water, largely used by railroads in supplying water stations, or suction pipes for pumps, etc., etc., being cheaper and better than copper or lead. Tobacco, Lard, Timber, and Mill Screws, always on hand. Castiron Railings, Railroad and Car wheels, other castings for railroads, and general job work. 20 4*

PARTNER WANTED—BUILDING REAPERS. The subscriber owns the patent for Atkin's Self-Raking Reaper and Mower, of which 300 were used last season in twenty States, with almost uniform success. It has received 51 first premiums since 1852, two at the N. Y. Crystal Palace. It saves not only the raker, but at least another hand in binding, the grain being laid unusually straight, and is also a good mower. Its sales can be almost indefinitely extended. 700 are being built at Chicago, Ill., and 500 at Dayton, Ohio. In my Chicago manufactory I want a partner: he must have good business abilities and experience, be industrious, agreeable, straight-forward, honorable; have $20,000 or more capital that he can at once or gradually put in. The partnership may be formed immediately, or I would give a year's trial, paying 10 per cent. on the capital (with good security) and a fair salary. Such an opportunity seldom offers. The business is well established, safe, pleasant, lucrative. Chicago is the central point of the great farming region of our country, and railroads and water communication connect us with every part. Reapers will be wanted by thousands, and certainly none now stands higher than the Self-Raker. I give a first-rate chance, and will have none but a first-rate partner

J. S. WRIGHT.

"Prairie Farmer" Warehouse, Chicago, Jan. 11, 1855.

☞ Agents also wanted, where there are none, to sell reapers. Pamphlet circulars, giving impartially the complaints and difficulties as well as commendations, mailed to applicants. 1*

HUB MORTISING MACHINE—Price Reduced—We have finished a few of Roys and French's patent, undoubtedly the best machine for the purpose ever invented. We will take back the machine and refund the money, in all cases, if they fail to satisfy buyers. Wagon and carriage makers will do well to give them a trial. They will bore and mortise thirty to forty hubs a day, and answer also for other work.

20 4* TEVIS & BARBAROUX, Louisville, Ky.

TO MANUFACTURERS, Capitalists, and Railroad Contractors.—Lyon's improved Ditching Plow, figured and described in the Scientific American, Vol. 10, page 116. The subscribers are now ready to dispose of territorial rights to manufacture and sell the above machines; they are a valuble machine for grading and ditching for rail and common roads. LYON & LEWIS, proprietors, Farmington, Van Buren Co., Iowa. 20 2*

TO LET, WELL LIGHTED ROOMS with Steam Power—at low rates, in the new buildings 7, 9, 11, and 13 Canal, corner of Elm: and 98, 100, and 102 Walker. Apply to M. J. GAUDU, Engineer, 102 Walker st. 20 4*

United States Patent Office,
Washington, Jan. 11, 1855.

ON THE PETITION of Loring Coes, of Worcester, Mass., praying for the extension of a patent granted to him on the 16th day of April, 1841, for an improvement in "screw wrenches." for seven years from the expiration of said patent, which takes place on the 16th day of April, 1855.

It is ordered that the said petition be heard at the Patent Office, on Monday, the 2nd of April next, at 12 o'clock. M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing: all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 22nd of March; depositions and other papers relied on as testimony, must be in the office on or before the morning of that day, the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.: Evening Argus, Philadelphia, Pa.: Scientific American, New York, and Boston Post, Boston, Mass., once a week for three successive weeks previous to the 2nd day of April next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy, and send their bills to the Patent Office, with a paper containing this notice. 20 3

United States Patent Office,
Washington. Jan. 8, 1855.

ON THE PETITION of Jesse Reed, of Marshfield, Mass., praying for the extension of a patent granted to him the 16th day of April, 1841, for an improvement in "Pumps," for seven years from the expiration of said patent, which takes place on the 16th day of April, 1855:

It is ordered that the said petition be heard at the Patent Office on Monday, the 2nd day of April next, at 12 o'clock M., and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days from the day of hearing. All testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the Office, which will be furnished on application.

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CHARLES MASON,
Commissioner of Patents.

P. S. Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice 19 3

NOTICE—The connection in business between SHERRY & BYRAM is hereby dissolved by mutual consent. JOHN SHERRY is fully authorized and empowered to settle all out-standing claims, and to whom all bills must be presented for payment.

JOHN SHERRY.
EPHRAIM N. BYRAM.
Sag Harbor, Jan. 1st, 1855. 19 3

AN ENGINEER—At present engaged in constructing Machinery for the Furnaces, Mills, and Mines of the Montour Iron Works, desires another engagement in connection with an Engine Shop and Foundry, Iron Works, or Railroad. Long experience in business, and designing, draughting, and constructing machinery, fully qualifies him to fill the desired situation. Testimonials from the party with whom he is now engaged, and from well known engineers can be produced. Address Box 3, P. O., Danville, Montour Co., Pa. 19 2*

MACHINISTS TOOLS—SHRIVER & BROS., Cumberland, Md., (on B. and O. Railroad, midway between Baltimore and the Ohio River,) manufacturers of Lathes, Iron Planers, Drills and other machinists tools 50 6m*

A PROFITABLE INVESTMENT—Can be made by purchasing rights of my Patent Tenoning Machine, patented Aug. 29th, 1854, pronounced by good mechanics to be the best machine in use; is adapted to all kinds of work including double and cap tenons for car or other heavy work, will do the work of from three to eight ordinary machines, can be set in one minute for boring or squaring the ends of stuff for rights or machines. Address C. P. S. WARDWELL, Lake Village, N. H. 19 4

MODELS FOR INVENTORS—CHARLES KIRCHOFF, Manufacturer of Models, Scientific, Philosophical and Artistic Instruments, Machines, &c., corner of West Broadway and Thomas street, New York. 19 4*

ENAMELLED CA'ST IRON HOLLOW WARE—Persons desirous of embarking into this lucrative and safe business, can hear of a practical competent enameller by directing (post-paid) to WM. STINE, Chatham Square P. O., New York. 19 2*

MACHINE GROUND CIRCULAR SAWS—(Patent applied for.) Mill men would do well to try these saws, are perfectly free from thin or thick places, can be used thinner and with less sett, and run faster than any other hitherto made. All diameters and thicknesses warranted perfectly true. HENSHAW & CLEMSON, 31 Exchange street, Boston. 19 8*

DICTIONARY OF TECHNICAL TERMS—In French, English, and German. A new work presenting all the terms used in science and art. The terms are first given in French, then in English and German. It is the first of three volumes arranged differently, and is a very useful work. For sale at this office, price $1,31

THE FRENCH EXHIBITION—Parties who have applied for space in the French Palace of Industry, and who do not intend to be present at the Exhibition, are recommended by the undersigned to arrange with Messrs. Gardissal & Co., No. 29 Boulevard St. Martin, Paris, who are prepared to put upon Exhibition, attend, and effect sales of articles intrusted to their care. It is a responsible concern. S. H. WALES, State Commissioner, Scientific American Office.

BUFFALO MACHINERY DEPOT—Terrace St. and 36 Lloyd st., Buffalo; J. W. HOOKER, Proprietor, H. C. Brown, Superintendant, offers for sale Machinists' tools of all kinds: Engine Lathes, Planers, Drills, Chucks, Boring Mills; also machinery of all kinds on hand or furnished to order. 7tf

CIRCULAR SAW MILLS—The undersigned manufacture for sale Child's Patent Circular Saw Mills for cutting lumber from logs of any size, with 40 and 24 inch, to 48 and 54 inch saws. Also single mills with 36 inch to 72 inch saw. These machines are warranted capable of cutting more lumber in a given time than any other saw mills in use. H. WELLS & CO., Florence, Hampshire Co, Mass. 17 4*

STAVE AND BARREL MACHINERY—Hutchinson's Patent. This machinery which received the highest award at the Crystal Palace, is now in daily operation there. Staves, heading, &c., prepared by it are worth to the cooper 20 to 40 per cent. more than when finished in any other way. Special attention is invited to the improved Stave Jointer. Apply to C. B. HUTCHINSON & CO., Crystal Palace, or Auburn, N. Y. 13 tf

PATENT DRIERS—Zinc Driers, Graining Colors, Stove Polish, Gold Size, &c., &c., 114 John street, New York. QUARTERMAN & SON, Manufacturers. 1 6m

NEW HAVEN MANUFACTURING COMPANY Machinists' Tools. Iron planers and Engine Lathes of all sizes. Hand Lathes, Gear Cutters, Drills, Bolt Cutters, Chucks, &c., on hand and being built by the quantity, which enables us to sell low. For cuts giving full description and prices, address New Haven Manufacturing Co., New Haven, Conn. 13 tf

HARRISON'S GRAIN MILLS—Latest Patent.—$1000 reward offered by the patentee for their equal. A supply constantly on hand. Liberal Commissions paid to agents. For further information address New Haven Manufacturing Co., New Haven, Conn., or to S. C. HILLS, our agent, 12 Platt Street, New York. 13 tf

FELTING FOR STEAM BOILERS AND SHIPS—Manufactured by J. H. Bacon, Winchester, Mass., for sale at W. & J. MORRISON'S, No. 9 Maiden Lane, N. Y., and T. C. BACON & CO.'S, corner of Union and North sts., Boston, Mass. 15 5*

NORCROSS ROTARY PLANING MACHINE—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringemet of the Woodworth Patent.

Rights to use N. G. Norcrois's patented machine can be purchased on application to N. G. NORCROSS, 208 Broadway, New York.

Office for sale of rights at 208 Broadway, New York; Boston, 27 State street, and Lowell, Mass. 16 6m*

CHEAP LIGHT—A. M. MACE, manufacturer of atmospheric or Benzole Gas Machines: size from 2 to 1000 lights. All orders promptly executed corner of Main street and Harrison avenue, Springfield, Mass. 15 3m*

IRON PLANERS—NEW PATTERN—Now building, and for sale on better terms than any others in the country of same quality. Address New Haven Manufacturing Co., New Haven, Conn. 11 tf

STATIONARY STEAM ENGINES—The subscriber is now prepared to furnish, with or without pumps, boilers, &c., Horizontal Engines on iron bed frames, good strong, substantial, plain finished engines that will do good service, say from 4 horse, $215, to 30 horse, $1,037; they have Judson's patent valves, and will be warranted to work well. S. C. HILLS, 9 e3wtf 12 Platt st., New York.

MATHEMATICAL AND OPTICAL INSTRUMENTS—The undersigned has just opened a new and extensive assortment of the above Instruments, his own selection made in Europe. It should also be kept in mind that he has the exclusive agency for the sale of the justly celebrated Swiss Drawing Instruments. Transits, Levels, and Surveyors Compasses made to order.

C. T. AMSLER,
8 6eow* 211 Chesnut st., Philadelphia, Pa.

MACHINERY—S. C. HILLS, No. 12 Platt st., N. Y. dealer in Steam Engines, Boilers, Planers, Lathes Chucks, Drills, Pumps; Mortising, Tenoning, and Sash Machines. Woodworth's and Daniel's Planers; Dick's Punches, Presses and Shears: Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c. 7 e3w

IRVING'S PATENT SAFETY CIRCULATING STEAM BOILER.—Testimonials—"I certainly would not exchange it for any boiler I have ever seen or used."—W. Burtt, Esq., Kal., Mich.

"It is the most economical boiler and produces more steam of a better quality than any I have ever used."—A. Low, Esq., Franklin Foundry, Albany, N. Y.

"I am well pleased with the principle of this boiler, and believe it to be the best in use."—L. E. Webb, Esq., Guilford, Conn.

"We find evaporation per 1 lb. of coal to be equal to 13'003 lbs. water."—Rep. Messrs. Ehman & Cook, Engineers.

Orders for Boilers promptly filed. Descriptive circulars obtained on application at the Company's office. Rights negotiated for the United States, England, France, and Belgium. W. F. PHELPS, Sec.'y Irving Boiler Co. 347 Broadway. 10 6eow*

WIRE ROPE OF IRON AND COPPER—For Mines, Inclined Planes, Hoisting and Steering purposes, Stays or Braces, &c., &c., much safer and far more durable than the best hemp or hyde ropes. Also for Sash Weights, Dumb Waiters, Lightning Conductors, &c. CHARLES W. COPELAND, No. 64 Broadway. 14 eowtf

A. B. FLY, Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y

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NORTHVILLE MACHINE WORKS—Manufactory of Machinists Tools, consisting of Engine Lathes, Power Planers, Hand Lathes, Engine Lathe for turning chair stuff, all of the most improved patterns and quality of workmanship. Worcester, Northville, Mass., Augus 9, 1854. TAFT & GLEASON. 50 1y*

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Science and Art.

Brass Formed by Galvanic Agency.

Copper is more electro-negative than zinc, and separates more easily from its solution than a metal less negative. If then, in order to obtain a deposit of brass by galvanic means, we employ a solution containing the two component metals, copper and zinc, in the proportions in which they would form brass, there will only be produced by the action of the battery a deposit of real copper; the zinc, more difficult of reduction, remains in solution. What must be done, then, to obtain a simultaneous precipitate of the two metals in the proportions required, is either to retard the precipitation of the copper, or to accelerate that of the zinc. This may be effected by forming the bath with a great excess of zinc and very little copper. Dr. Heeren gives the following proportions as having perfectly succeeded:—

There are to be taken of sulphate of copper, 1 part; warm water, 4 parts; and then sulphate of zinc, 8 parts; warm water, 16 parts; cyanide of potassium, 18 parts; warm water, 36 parts.

Each salt is dissolved in its prescribed quantity of water, and the solutions are then mixed; thereupon a precipitate is thrown down, which is either dissolved by agitation alone, or by the addition of a little cyanide of potassium; indeed it does not much matter if the solution be a little troubled. After the addition of 250 parts of distilled water, it is subjected to the action of two Bunsen elements, charged with concentrated nitric acid, mixed with one-tenth of oil of vitriol. The bath is to be heated to ebullition, and is introduced into a glass with a foot, in which the two electrodes are plunged. The object to be covered is suspended from the positive pole, whilst a plate of brass is attached to the negative pole. The two metallic pieces may be placed very near.

The deposit is rapidly formed if the bath be very hot; after a few minutes there is produced a layer of brass, the thickness of which augments rapidly. Deposits of brass have been obtained in this way on copper, zinc, brass, and Britannia metal; these metals were previously well pickled. Iron may, probably, also be coated in this way; but cast-iron is but ill adapted for this operation. [London Mining Journal.

Elder Flower Ointment and Oil.

In the London Pharmacopœia the flowers are directed to be boiled with the lard, in making *unguentum sambuci*. By this process the odor of the flowers is entirely destroyed, and the ointment acquires an empyreumatic smell from the action of heat on the flowers. To obviate this result, and to make an ointment possessing the pleasant odor of elder flowers, I beg to suggest the following process, which I have found effectual.

Melt the lard at the lowest possible temperature at which it assumes the fluid form, and introduce into it as many flowers as the melted lard will cover. Macerate them at the above temperature for twelve hours, and then strain off the lard through a piece of linen, without the least pressure. By this means an ointment will be made, when the lard is cold, which represents that which the College really intend it should be.

The oil of elder flowers requires no heat for its preparation, and is prepared precisely as the ointment, with the exception of the heat; as the only object of its use is to obtain the menstruum in a fluid form, and besides, its employment on any other ground is objectionable, especially as it volatilizes the odorous principle of the flowers.—[Septimus Piesse, London.

More Gold Mines in Georgia.

A correspondent of the Augusta (Ga.) *Chronicle and Sentinel* states that one of the richest gold mines in the South has been discovered in Hart Co., on the land of Mr. Jas. Brown. The ore yields from $10 to $20 per bushel.

History of Reaping Machines.—No. 16.

On the 7th of August, 1847, Obed Hussey, of Baltimore, Md., obtained a patent for fastening the upper piece of the guard to the lower piece, only at one point, leaving the back end unconnected, the space between the lower and upper pieces of the guard, through which the blade vibrates, is open behind to prevent choking, as stated on page 120. On the same date a patent was granted to D. A. Church, and L. H. Obert, of Friendship, N. Y., and W. W. and O. F. Willoughby, of Chicago, Ill. The claim is for making the cutting knives solid at their inner angle. On the 23rd of October, same year, C. H. McCormick, obtained another patent for placing the gearing and crank forward of the driving wheel, for protection from dirt, to carry the driving wheel further back than before, to balance the rear part of the frame, and the raker thereon, when this position of the parts is combined with the sickle back of the axis of motion of the driving wheel, by means of the vibrating lever; also the arrangement of the seat of the raker over the end of the finger piece, which projects beyond the range of fingers, and just back of the driving wheel, in combination with and placed at the end of the reel, whereby the raker can sit with his back towards the team, and have free access to the cut grain, &c. On Nov. 4th, 1848, Francis S. Pease, of Buffalo, N. Y., obtained a patent embracing claims for a combination of levers to operate a rake; also for a toothed blade case, made in uniform sections, each section having a tooth cast in one piece with it, and the whole attached to a rack bar by screws or otherwise; also a means of changing the point of draft by slides and clamp screws.

On the 21st of November, same year, a patent was granted to Wm. Boone, of New Hope, Mo., for a rotary reaper, the claims being for a combination of hinged scythes and radial boxes, the scythes being so made and arranged as to form a circular cutting edge, each scythe being a segmental cutter, so arranged as to be easily disengaged for sharpening. The vertical axle of the cutters was revolved by cog gearing.

Uriah H. Goble, and Alex. Stuart, of Urbana, Ohio, obtained a patent on the same date, for a rotating rake, which was made to pass horizontally across the platform, and giving it an unequal motion, for the purpose of raking the cut grain in an effectual manner.

Daniel Cushing, of Aurora, Ill., also obtained a patent on the same date, embracing three claims. First, making vibrating cutters sickle-edged, moved as set forth. Second, arranging the double cranks and axles of the rakes to cause them to turn together and turn two endless rakes. Third, the arrangement of the transverse revolving rakes with another rake for delivering the cut grain upon the platform.

On the 16th of January, 1849, Oliver Barr, of Aurora, Ill., obtained a patent, in which was claimed the form of the fixed sickles, with curved edges, in combination with triangular sickles attached to a vibrating bar; an arrangement of guide rail with the reel heads, a chain band, a revolving rake, and an inclined platform; also a trap door or folding platform, for folding and dropping down the cut grain in bundles, operated by certain devices.

Jonathan Haines, of Union Grove, Ill., obtained a patent on March 27th, same year, for suspending the frame of the conveyor, reel, and cutter, upon the axles of the wheels, when hinged to the tongue, and made capable of turning on its bearings by a lever for elevating and depressing the cutter.

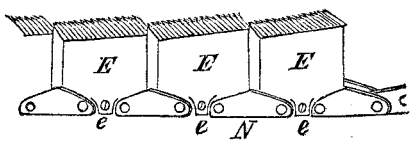
Jas. L. and Henry K. Fountain, of Rockford, Ill., obtained a patent on May 15th, same year. The claim is for "giving to a vibrating blade a compound transverse and horizontal cut by combining it with stationary teeth, or a reel.

John Hinton, of Monroe Co., Va., obtained a patent on the 22nd following, for a clover reaper, which cut off the clover heads, and conveyed them to a receiving box.

Alfred James Purviance, of Updegraffs, Ohio, obtained a patent on the same date as Hinton, for constructing the platform separate from the other framework, to convert the machine easily into a mower or reaper, as required.

On the 12th of June following, a patent was granted to Nelson Platt, of Ottowa, Ill., which was assigned to W. H. Seymour and D. S. Morgan. Figure 44 is a view of his novel cutters. They consist of a series of short sections, E, of uniform shape, and corresponding in length with the links of an endless chain, N, to which they are attached by bolts, *e*. By this arrangement each cutter tooth can be readily renewed for sharpening or repair, and as the cutters form no part of the chain, but are merely carried by it, they are not subjected to so much strain as they would be, if they formed the links of the chain. The edges of the cutters are serrated like a sickle. One end of each section is sharpened, so as to cut off any straw or obstructing substance that happens to intervene between the sharpened edge, and the corner of the next adjacent section. The inventor regards this feature as one of much importance, since it renders the sections capable of freeing themselves from all choking substances, the presence of which would be likely to break the machine.

Fig. 44.



The chain with its cutters, is stretched around a pulley and a cog wheel, the teeth of which bite into the interstices between the chain links, so that when the cog wheel revolves, the chain is carried with a similar velocity.

The grain is pressed up against the cutters by means of a reel. The claim on this portion of the improvement is the combination of a series of removable cutters, with the link of an endless revolving chain, which carries them successively into contact with the grain or grass. Also for making one end of the sections sharp, for the purposes we have described.

The patent also embraces claims for raking the grain, and placing the grain in bundles at right angles to the path of the machine. This patent was surrendered and reissued on the 23rd of last May, (1854.) We have been informed that these cutters operate well.

Correction.—Messrs. Editors—The figure No. 41 and 42 in your paper of the 13th January, under the head of History of Reaping machines, you say illustrates McCormick's patent of 1845. This is a mistake, and we wish to have the matter placed right before the public. These plates represent McCormick's reaper as he made it in 1852, or possibly as early as 1851, but not before that. This is as early as he used the zig-zag edged sickle. We had used it one or two years before; his patent of 1845 was for the straight edged sickle teeth, reversed every one and a-half inches in order to cut both ways, and for the spear pointed fingers. (We refer you to his patent.) Moore & Hascall are entitled to the credit of the invention of the zig-zag edged sickle, and also the identical straight sickle as claimed by McCormick. They made and used the straight sickle teeth, reversed in 1835 and 1836, and in 1838 or '39 the zig-zag edged sickle. Seymour & Morgan.

Brockport, Jan. 12, 1855.

[We have thoroughly examined the claims of Mr. McCormick, and find that Messrs. Seymour & Morgan are correct; his patent of 1845 embraced the straight cutter. He, however, used the cutters referred to above, in the machine which he took to the World's Fair in London in 1851, and these cutters, we were led to understand, formed part of his improvements. It is our desire that every part of this History of Reapers should be reliable and correct, but owing to the great number of patents issued for improvements on them—some very trifling, but still diffuse and vaguely described—it is very difficult, in many cases, to separate the wheat from the chaff.

A Large Gun.

The largest cannon in the world is in Bajapoor, India, and weighs forty tuns; a seat in the interior accommodates five persons, without much crowding. It is formed of mixed metal, of which there is said to be some portions of gold, and a considerable quantity of silver. Upon being fired off as a salute on one occasion, though not charged with more than half the weight of powder which its chamber could contain, the concussion was awful; it shook many of the buildings to their foundations, and the terrified inhabitants, as the reverberation rolled along, expected to see the domes and towers, survivors of former shocks, come tumbling about their ears.

Spanish Sweet Potatoes.

The Atlanta (Ga.) *Examiner* says, over eight hundred bushels of the Spanish variety of sweet potatoes have been raised by Mr. Edward Shepherd, on two acres of land, near Columbus, Ga. He is reported to have discovered a mode of cultivation by which such large crops can be raised as a general thing.

LITERARY NOTICES.

American Almanac for 1855.—This Repository of Useful Knowledge, published by Phillips, Sampson & Co., Boston, has attained to its 26th volume. Besides containing a useful calendar for every month of the present year, it is packed with other interesting matter. It has a chapter on Atmospherical Electricity, by Prof. Lovering, of Harvard University: it contains much that is useful on astronomy, by Prof. Bond, of Cambridge. All the finances of the different States are given, school funds, railroads, canals, the officers of the General and State Governments, the judiciary; in short everything. The American Almanac has a high character for correctness, and a large store of necessary information, for the every-day use of every person. It is for sale by J. C. Derby, this city.

American Engineering—We have received the first part of a new work bearing the above name, by G. Weissenborn, C. E., of 131 Fulton street, this city; it is illustrated by two very large sheets of good working drawings of beaam engine, constructed by Hogg & Delameter, for the New York Steam Sugar Refinery. The price per part is $1. We hope this work will meet with a successful patronage.

Serials Received—The *National Magazine*, an excellent monthly, published by Carlton & Phillips, N. Y. The *Acacia*, a Masonic magazine, ably edited by W. P. Mellen, Natchez, Miss. *Journal of the Franklin Institute*, Philadelphia, Pa., old, faithful, and well tried. *The American Cotton Planter*, a monthly publication of rare merit, edited by Dr. Cloud, Montgomery, Ala. The *Schoolmate*, edited by A. P. Phippen, New York; a good work for youthful scholars.

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